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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

3,140,054, Vladimir Oharenko, SAFETY INSPECTION LIGHT, **filed** Mar. 25, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1454, *Vladimir Oharenko* v. *Snap-On Tools Corporation and Warshawsky and Company.*

3,174,863, Allen A. Shoup, SMOKELESS BROILER, **filed** May 4, 1976, D.C. Conn. (New Haven), Doc. N–77–32, *Marian Shoup* v. *Scovill Manufacturing Company.* Defendant is permanently enjoined and restrained from directly or indirectly infringing plaintiff's patent. Filed Mar. 26, 1980.

3,552,469, B & J Manufacturing Company, TIRE BEAD SEATER; **3,675,705,** same, TIRE BEAD SEATING AND INFLATION APPARATUS; **3,805,871,** same, TIRE MOUNTING, BEAD SEATING AND INFLATION APPARTUS AND METHOD OF USE, **filed** Aug. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2174, *B & J Manufacturing Company* v. *Hennessy Industries, Inc.* Post trial ruling and final judgment entered Dec. 21, 1979.

3,560,284, Collins & Aikman Corporation, METHOD OF MAKING FOAM-BACKED TUFTED CARPET; **3,695,987,** same, FOAM-BACKED CARPETS; **3,728,182,** same METHOD OF PREPARING RESIN-BACKED TUFTED CARPET TILES, **filed** Feb. 5, 1980, D.C., N.D. Ga. (Rome), Doc. C80–32R, *Collins & Aikman Corporation* v. *Stratton Industries, Inc. and Compo Industries, Inc.*

3,564,526, Ernest O. Butts, PIPELINE LEAK DETECTION DEVICE, **filed** Sept. 15, 1978, D.C., S.D.N.Y. Doc. 78–C–4348 (HFW), *Leak "X" Detection Devices Ltd. and Leak "X" Corp USA,* v. *Walter Gorman and James Murray.* Action is discontinued without costs to either party. Subject to reinstatement within 60 days. Mar. 4, 1980.

3,597,187, Owens-Illinois, Inc., APPARATUS FOR HANDLING MOLD CHARGES OF MOLTEN GLASS, **filed** Mar. 5, 1973, D.C. Conn. (New Haven), Doc. 15662, *Owens-Illinois, Inc.* v. *Emhart Corporation.* Defendant is enjoined from infringing plaintiff's patent. Feb. 25, 1980.

3,675,705. (See 3,552,469.)

3,695,987. (See 3,560,284.)

3,700,809, Donald J. Nadon, INDUCTIVELY COUPLED GRID CURSOR; **3,904,822,** Vernon C. Kamm et al. ABSOLUTE POSITION DETERMINING SYSTEM USING FREE STYLUS, **filed** Mar. 31, 1980, U.S. Court of Claims (Washington, D.C.), Doc. 153–80C, *Summagraphics Corporation* v. *The United States.*

3,721,651, H. H. Robertson Company, BOTTOMLESS SUBASSEMBLY FOR PRODUCING AN UNDERFLOOR ELECTRICAL CABLE TRENCH, **filed** Aug. 8, 1979, D.C.N.J. (Newark), Doc. 79–2344, *H. H. Robertson Company* v. *Rollform Products, Inc.* Stipulation and order of dismissal of action filed Aug. 13, 1979.

3,728,182. (See 3,560,284.)

3,739,892, Joseph C. Liberty, Jr., REPLACEABLE ANNULAR GEAR, **filed** Apr. 3, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80–1328, *Joseph C. Liberty, Jr.* v. *Aviation Automotive Parts of Norristown, Inc. et al.*

3,765,030, Engelbert J. Peham, NESTABLE PLASTIC HAT WITH HEAD SIZE ADJUSTMENT, **filed** Sept. 26, 1977, D.C., M.D. Pa. (Scranton), Doc. 77–887, *Peham Plastics, Inc.* v. *Jacobson Hat Company.* Order that Patent No. 3,765,030 declared invalid and thereby not infringed. Apr. 2, 1980.

3,790,915, Deutsch Relays, Inc., MOUNTING ARRANGEMENT FOR ELECTRICAL PLUG-IN COMPONENTS, **filed** Apr. 11, 1980, U.S. Court of Claims (Washington, D.C.), Doc. 170–80 C, *Deutsch Relays, Inc.* v. *The United States.*

3,805,871. (See 3,552,469.)

3,852,830, Richards Mfg. Co., Inc., KNEE PROSTHESIS, **filed** Dec. 23, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–260, *Richards Manufacturing Company, Inc.* v. *Zimmer USA, Inc.* Judgment entered in favor of defendant and complaint dismissed with each party to bear its own costs. Jan. 31, 1980.

3,889,306, Phillip W. Geertson, BEE BOARD CLEANER, **filed** Dec. 31, 1979, D.C., E.D. Wash. (Spokane), Doc. C–79–439, *Phillip W. Geertson* v. *Robert M. Fulgham.* Consent judgment entered Apr. 1, 1980.

3,904,822. (See 3,700,809.)

3,905,162, Silicon Material, Inc., METHOD OF PREPARING HIGH YIELD SEMICONDUCTOR WAFER, **filed** Oct. 23, 1978, D.C., N.D. Calif. (San Jose), Doc. C–78–2480–SW (SJ), *Silicon Material, Inc.* v. *Siltec Corp.* Stipulation for dismissal and order filed Mar. 14, 1980.

3,906,974, Daniel Marcel Chevallier, MARINE LOADING ARM, **filed** June 19, 1978, D.C., S.D. Miss. (Biloxi), Doc. S78–0196(R), *FMC Corporation* v. *EMCO Wheaton, Inc.* Order of dismissal with each party bearing own costs filed Mar. 17, 1980.

3,904,373, Christen Incorporated, PAPER LOG ROLLER; **D. 237,141,** same, **filed** Dec. 17, 1979, D.C., E.D. Pa. (Philadelphia), Doc. 79–4593, *Christen Incorporated* v. *Robbins Jewelers & Distributors, Inc.* Defendant is permanently enjoined after June 1, 1980 from infringing plaintiff's patents. Filed Apr. 15, 1980.

4,004,295, Robert M. Byrnes, Sr., PROTECTIVE GLOVE CONSTRUCTED OF FLEXIBLE STRANDS OF METAL WIRE AND FIBER YARN, **filed** Mar. 3, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–342, *Robert M. Byrnes, Sr.* v. *Safety First Industries, Inc.*

4,007,761, Union Carbide Corporation, PREPACKAGED SHIRRED TUBULAR CASING ARTICLE, **filed** Apr. 4, 1980, D.C., C.D. Ill. (Danville), Doc. 80–2073, *Union Carbide Corporation* v. *Teepak, Inc.*

4,015,299, Robert Tinnel, WATER BED, **filed** Apr. 22, 1980, D.C., N.D. Calif. (San Francisco), Doc. C–80–1544 WAI, *Ultimate Water Bed Co.* v. *J. C. Penney Co.*

4,015,525, Norwood Marking & Equipment Co., Inc., IMPRINTER AND ACTUATOR THEREFOR, **filed** Oct. 30, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c4534, *Norwood Marking & Equipment Co. Inc.* v. *Bill Barber.* Order dated Apr. 11, 1980. Status hearing held. Cause dismissed.

4,020,848, Tripoli J. Di Cicco, EAR LOBE PIERCING APPARATUS, **filed** Feb. 27, 1978, D.C.N.J. (Newark), Doc. 78–388, *Roman Research, Inc. et al.* v. *Inverness Corp.* Order for dismissal of action without costs filed Apr. 2, 1980.

4,041,199, Foseco International Limited, REFRACTORY HEAT-INSULATING MATERIALS, **filed** Apr. 22, 1980, D.C., N.D. Ohio (Akron), Doc. C–80–595A, *Foseco International Limited* v. *Fireline Inc. et al.*

4,047,481, Container Graphics Corp., APPARATUS FOR PRINTING INDICIA ON CORRUGATED BOARD AND THE LIKE, **filed** Apr. 3, 1980, D.C. Conn. (Hartford), Doc. H80–209, *Rogers Corporation* v. *Container Graphics Corp.*

4,058,323, Chicago Roller Skate Company, DIE CAST ROLLER SKATE SOLE PLATE, **filed** Mar. 14, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–00987, *Chicago Roller Skate Company* v. *Macla Products, Inc.*

4,071,265, Thomas J. Wallace, THREADED MECHANICAL JOINT WALL SLEEVE, **filed** Apr. 10, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1759, *Midwest Pipe Fabricators Inc.* v. *Hersey Products Inc.*

4,076,008, Guy W. Deaton, BARBEQUE APPARATUS AND METHOD, **filed** Jan. 2, 1980, D.C., N.D. Ga. (Atlanta), Doc. C–80–03A, *Guy W. Deaton* v. *B. A. Morgan, doing business as Morgan Welding and Fabrications et al.*

4,147,100, Dykstra and Chrablow, TRASH COMPACTOR; **4,188,872** same, COMPACTOR, **filed** Apr. 2, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1630, *Krossfield, Inc.* v. *Donald Dykstra et al.*

4,149,331, Jack Prager, FRAME FOR DISPLAYING PHOTOGRAPHS OR THE LIKE, **filed** Mar. 27, 1980, D.C., S.D.N.Y., Doc. 80–C–1758, *Prager & Partners Inc.* v. *APF, Inc.*

4,176,071, Robert L. Crouch, CORROSION INHIBITOR MIXTURE FOR AMMONIUM SULFATE FIRE-RETARDANT COMPOSITIONS AND METHOD FOR INHIBITING CORROSIVITY OF SUCH COMPOSITIONS, **filed** Apr. 9, 1980, D.C. Ariz. (Phoenix), Doc. C–80–264–PHx, *Early California Industries, Inc., doing business as Chemonics Industries* v. *Omega Chemical Compounding International et al.*

4,180,357, Gerd P. H. Lupke and Manfred A. A. Lupke, APPARATUS AND METHOD FOR PERFORATING TUBING AND METHOD OF PRODUCING PART OF SUCH APPARATUS, **filed** Apr. 17, 1980, D.C., C.D. Ill. (Danville), Doc. 80–2078, *Corma Inc.* v. *Heinrich Dickhut, doing business as Cullom Engineering Trust.*

4,186,821, McNeill Corporation, LUBRICATING APPARATUS, **filed** Mar. 26, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1481, *Houdaille Industries, Inc.* v. *McNeill Corporation.*

4,188,872. (See 4,147,100.)

Re. 26,954, George B. Greene, TYPEWRITER WITH MEANS TO DECREASE RATE OF OPERATION TO PREVENT TYPEBAR MALFUNCTION, **filed** Apr. 20, 1976, D.C.N.J (Newark), Doc. 76–707, *George B. Greene* v. *Litton Industries, Inc. and Litton Business Systems, Inc.* Order invalidating Re. 26,954 and dismissing action filed Feb. 7, 1980.

Re. 27,674, T. Grether et al., CELERY HARVESTER, **filed** Apr. 3, 1980, D.C., C.D. Calif (Los Angeles), Doc. 80–01306 TJH, *Hi-Gear Harvester Co.* v. *Dave Walsh Co. of Salinas. Inc. and Don Collins.*

Re. 29,922, Sidney O. Sampson, TRACK SELECTION CONTROL MEANS FOR MAGNETIC SIGNAL RECORDING AND REPRODUCING SYSTEMS; **filed** Mar. 26, 1980, D.C., S.D.N.Y., Doc. 80–C–1715, *Sidney O. Sampson* v. *104 Camera World Inc., doing business as Camera World & Sound.*

D. 237,141. (See 3,964,373.)

D. 240,531, Kenneth W. Elkington, PORTABLE WATER PURIFIER, **filed** Mar. 28, 1980, D.C., S.D. Fla. (West Palm Beach), Doc. 80–6162–CIV–JCP, *Kenneth W. Elkington* v. *Joan Cook, Inc.*

D. 247,084, General Ideas, HANGER FOR ORGANIZING JEWELRY, **filed** Dec. 27, 1979, D.C., S.D.N.Y., Doc. 79–C–7006, *General Ideas* v. *Norbert Specialty Corp.* Stipulation and order discontinuing matter subject to reinstatement within sixty days filed Mar. 28, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,574,338, Re. S.N. 137,568, Filed Apr. 7, 1980, Cl. 239/553.3, STEAM DISTRIBUTION SYSTEM, Clifford D. Shelor, Owner of Record: *Westvaco Corporation, New York, N.Y.,* Attorney or Agent: W. Allen Marcontell, et al., Ex. Gp.: 313

3,705,976, Re. S.N. 128,544, Filed Mar. 10, 1980, Cl. 235/384, REVENUE CONTROL SYSTEM FOR TOLL ROADS, Michael M. Platzman, Owner of Record: *Inventor,* Attorney or Agent: George S. Baldwin, et al., Ex. Gp.: 235

3,715,555, Re. S.N. 129,849, Filed Mar. 13, 1980, Cl. 219/10.55 R, CIRCULAR WAVEGUIDE MICROWAVE APPLICATOR, Ray M. Johnson, Owner of Record: *Inventor,* Attorney or Agent: James J. Hill, et al., Ex. Gp.: 213

3,806,376, Re. S.N. 125,749, Filed Feb. 28, 1980, Cl. 148/12 R, METHOD FOR PRODUCING LOW-CARBON COLD ROLLED STEEL SHEET HAVING EXCELLENT COLD WORKING PROPERTIES AND AN APPARATUS FOR CONTINUOUS TREATMENT THEREOF, Kenzo Toda, et al., Owner of Record: *Nippon Steel Corporation, Tokyo, Japan,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 111

3,880,691, Re. S.N. 139,088, Filed Apr. 10, 1980, Cl. 156/244, PROCESS FOR PRODUCING FILM AND SHEET MATERIALS FROM THERMOPLASTIC MATERIALS HAVING HOT TACK BY THE BLOWN FILM PROCESS AND THE FILM AND SHEET MATERIALS THEREBY OBTAINED, Heinrich Pannenbecker, et al., Owner of Record: *Inventor,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 161

3,917,911, Re. S.N. 137,712, Filed Apr. 7, 1980, Cl. 179/37, SECURITY ENTRY SYSTEMS, James M. Lesher, Owner of Record: *Inventor,* Attorney or Agent: William Poms, et al., Ex. Gp.: 234

4,006,367, Re. S.N. 127,950, Filed Mar. 7, 1980, Cl. 307/252 B, SOLID STATE ALTERNATING CURRENT SWITCHING DEVICE, Eduard Karl Ott, Owner of Record: *Frontier Machinery Company, Walla Walla, Wash.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 254

4,053,433, Re. S.N. 110,338, Filed Jan. 7, 1980, Cl. 252/408, METHOD OF TAGGING WITH COLOR-CODED MICROPARTICLES, Pui Kum Lee, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Cruzan Alexander, Ex. Gp.: 223

4,075,962, Re. S.N. 125,762, Filed Feb. 28, 1980, Cl. 112/439, NEEDLEWORK TECHNIQUE USING RIBBON, Patricia D. Mabry, Owner of Record: *Inventor,* Attorney or Agent: Henry H. Skillman, Ex. Gp.: 353

4,085,178, Re. S.N. 133,252, Filed Mar. 24, 1980, Cl. 264/106, METHOD FOR PRODUCING INJECTION MOLDED AND CENTRALLY APERTURED DISC RECORDS, Michael L. McNeely, et al., Owner of Record: *Husky Injection Molding System Limited, Ontario, Canada,* Attorney or Agent: Donald S. Cohen, et al., Ex. Gp.: 147

4,086,102, Re. S.N. 137,911, Filed Apr. 7, 1980, Cl. 136/89 CC, INEXPENSIVE SOLAR CELL AND METHOD THEREFOR, William J. King, Owner of Record: *Inventor,* Attorney or Agent: Henry C. Nields, et al., Ex. Gp.: 114

4,114,476, Re. S.N. 020,821, Filed Apr. 24, 1980, Cl. 74/745, AUTOMATIC TORQUE STICK TRANSMISSION, Anthony W. Fini Jr., Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 352

4,125,421, Re. S.N. 127,345, Filed Mar. 5, 1980, Cl. 156/384, HAND-HELD LABELER, Paul H. Hamisch, Jr., Owner of Record: *Monarch Marking Systems, Inc., Dayton, Ohio,* Attorney or Agent: Joseph J. Grass, Ex. Gp.: 161

4,127,232, Re. S.N. 127,525, Filed Apr. 22, 1980, Cl. 235/419, METHOD AND APPARATUS FOR TALLYING FOOD ITEMS SELECTED ON MENUS, Michael Gagliardo, et al., Owner of Record: *Medfare, Inc., Westbury, N.Y. and Photobell Company, New York, N.Y.,* Attorney or Agent: Howard C. Miskin, Ex. Gp.: 235

4,139,547, Re. S.N. 137,405, Filed Apr. 4, 1980, Cl. 260/448.2 N, SILICONE CONTAINING BIS-THIOETHER AROMATIC AMINES, Abe Berger, Owner of Record: *M and T Chemicals Inc., Woodbridge, N.J.,* Attorney or Agent: Stanley A. Marcus, et al., Ex. Gp.: 117

4,186,282, Re. S.N. 133,224, Filed Mar. 24, 1980, Cl. 179/175.3 R, METHOD AND APPARATUS FOR MEASURING TELEPHONE LINE CHARACTERISTICS, John C. Ellson, Owner of Record: *Northern Telecom Limited, Montreal, Canada,* Attorney or Agent: John E. Mowle, Ex. Gp.: 234

PATENT NOTICES

Certificates of Correction for the Week of June 24, 1980

D. 254,306	4,179,468	4,186,080	4,193,020
3,846,384	4,179,652	4,186,088	4,193,298
3,983,298	4,179,788	4,186,132	4,193,464
4,056,381	4,180,257	4,186,219	4,193,549
4,059,198	4,181,036	4,186,293	4,193,633
4,070,195	4,181,281	4,186,466	4,193,941
4,077,832	4,181,310	4,186,564	4,194,084
4,105,154	4,181,523	4,186,709	4,194,135
4,108,754	4,181,581	4,186,820	4,194,340
4,110,271	4,181,731	4,186,901	4,194,579
4,110,380	4,181,766	4,188,100	4,194,884
4,114,492	4,181,787	4,188,235	4,194,903
4,123,961	4,182,235	4,188,778	4,194,974
4,127,157	4,182,623	4,188,864	4,195,036
4,129,116	4,182,855	4,189,202	4,195,174
4,133,202	4,182,873	4,189,429	4,195,305
4,136,153	4,183,059	4,189,922	4,195,350
4,137,455	4,183,229	4,190,493	4,195,404
4,137,964	4,183,317	4,190,535	4,195,552
4,138,281	4,184,118	4,190,551	4,195,770
4,140,301	4,184,484	4,190,668	4,195,885
4,158,381	4,184,511	4,190,839	4,196.005
4,161,190	4,184,771	4,190,923	4,196,369
4,163,076	4,184,772	4,191,064	4,196,419
4,165,374	4,185,004	4,191,303	4,196,723
4,166,976	4,185,026	4,191,338	4,197,420
4,167,484	4,185,129	4,191,742	4,197,630
4,168,541	4,185,294	4,191,744	4,197,642
4,173,480	4,185,430	4,191,776	4,197,680
4,174,076	4,185,453	4,191,831	4,197,959
4,174,243	4,185,470	4,192,072	4,198,052
4,174,447	4,185,483	4,192,431	4,198,483
4,174,988	4,185,655	4,192,489	4,198,890
4,175,114	4,185,871	4,192,551	4,199,155
4,176,028	4,185,906	4,192,662	4,202,913
4,177,608	4,186,047	4,192,677	

Dedication

3,977,485.—*Burke A. West* and *Michael R. Bethell*, Monroe, Mich. SNOW VEHICLE SUSPENSION SYSTEM. Patent dated Aug. 31, 1976. Dedication filed Apr. 21, 1980, by the assignee, *Monroe Auto Equipment Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,743,923.—*Goetz Wolfgang Steudel*, Flemington, N.J. REFERENCE VOLTAGE GENERATOR AND REGULATOR. Patent dated July 3, 1973. Disclaimer filed May 5, 1980, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 6, 7, 8, 9, 10 and 11 of said patent.

3,947,185.—*Shuji Maezawa*, Suwa, Japan. FIELD EFFECT LIQUID CRYSTAL DISPLAY DEVICE. Patent dated Mar. 30, 1976. Disclaimer filed Apr. 25, 1980, by the assignee, *Kabushiki Kaisha Suwa Seikosha.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,082,787.—*Robert James Bassett*, Hockessin; *Walter John Cordes*, Wilmington and *Julius Jakob Fuchs*, Wilmington, Del. METHYL ISOCYANATE PROCESS. Patent dated Apr. 4, 1978. Disclaimer filed May 5, 1980, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 11 and 18 of said patent.

4,121,120.—*Steven E. Wetterling*, Portland, Oreg. CLOCK DRIVEN VOLTAGE COMPARATOR EMPLOYING MASTER-SLAVE CONFIGURATION. Patent dated Oct. 17, 1978. Disclaimer filed Apr. 28, 1980, by the assignee, *Tektronix, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,123,785.—*Isaac Raymond Cherry*, Mission Viejo, and *Donald L. Anderson*, Huntington Beach, Calif. RECORDER FOR CARDIAC SIGNALS WITH MANUALLY ACTUATED EVENT MARKING. Patent dated Oct. 31, 1978. Disclaimer filed Aug. 27, 1979, by the assignee, *Del Mar Avionics.*

Hereby enters this disclaimer to all claims of said patent.

Disclaimer and Dedication

3,988,519.—*Frederick L. Stoller*, Greenville, S.C. LAMINATES OF A POLYMERIC FILM AND A NONWOVEN FABRIC. Patent dated Oct. 26, 1976. Disclaimer and Dedication filed May 13, 1980, by the assignee, *Phillips Petroleum Company.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification. Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-8-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,258 to 2,261, inclusive

REISSUES

JUNE 24, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

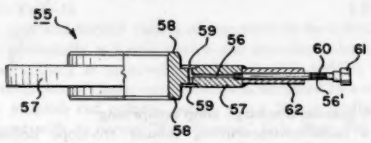
Re. 30,311
APPARATUS AND METHOD FOR EXTERNALLY TESTING CONDUIT CONNECTIONS

Gervase M. Chaplin, Jefferson, and Thomas W. Childers, St. Tammany, both of La., assignors to Exxon Production Research Company, Houston, Tex.

Original No. 4,019,371, dated Apr. 26, 1977, Ser. No. 652,969, Jan. 28, 1976. Application for reissue May 21, 1979, Ser. No. 41,028

Int. Cl.[2] G01M *3/28*

U.S. Cl. 73—46 **16 Claims**



20. Apparatus for use in testing a connection between fluid conductive conduits, said connection having two mateable flanges, each of which contains a circle of alignable bolt holes comprising:

a seal ring for engaging the surface of and sealing off the spaces between said flanges to prevent flow of fluids into and from said conduits via said flange connection;

a test ring having seal means for sealing off the spaces between said flange faces and said test ring, said test ring and said seal ring forming a one-piece unit;

an annular space formed between said seal ring, said seal means on said test ring and said mateable flange faces; and

a passageway for communicating test fluid under pressure to said annular space for testing the effectiveness of said seal ring and said seal means, said test ring having a greater diameter than said seal ring with the outside diameter of said test ring being about the same diameter as the inside diameter of said circle of bolt holes in said flanges.

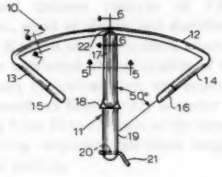
Re. 30,312
INTRAUTERINE CONTRACEPTIVE DEVICE

Elton Kessel, 520 Morgan Creek Rd., Chapel Hill, N.C. 27514

Original No. 4,054,131, dated Oct. 18, 1977, Ser. No. 713,233, Aug. 10, 1976. Application for reissue Sep. 5, 1978, Ser. No. 939,829

Int. Cl.[2] A61F *5/46*

U.S. Cl. 128—130 **15 Claims**



1. An intrauterine contraceptive device comprising:

a. an elongated stem having an upper portion and a lower portion[;], *said stem upper portion having a thickness of between 4.0 to 6.0 mm as measured in a plane perpendicular to the anterior and posterior walls of the endometrium when the device is inserted in the uterus;*

b. a resilient downwardly bowed crossbar integrally secured at its midpoint to the tip of said stem upper portion; and

c. a pair of resilient arms formed as integral continuations of the opposed ends of said crossbar, said arms being angled downwardly and inwardly toward said stem and terminating short of touching said stem, and the line of each of said arms defining an included angle with the central axis of said stem of between 40° and 70°.

Re. 30,313
RESISTORS AND COMPOSITIONS THEREFOR

Peter F. Carcia, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,974,107, dated Aug. 10, 1976, Ser. No. 455,364, Mar. 27, 1974. Application for reissue Dec. 20, 1977, Ser. No. 862,381

Int. Cl.[2] H01B *1/06*

U.S. Cl. 252—520 **50 Claims**

19. A powder composition useful for forming film resistors on a dielectric substrate, the powder comprising pyrochlore-related oxides and a titanium material selected from the class consisting of

1. a metal titanate and a glass comprising at least 10 weight percent PbO dissolved therein, *and*

2. [one or more glasses at least one of which comprises at least 5 weight percent titanium dioxide dissolved therein and a metal oxide and is capable of crystallization to form a metal titanate upon being heated and 3.] titanium oxide and a glass comprising at least 10 weight percent PbO dissolved therein,

said pyrochlore-related oxides being selected from among those of the formula

$$(M_xBi_{2-x})(M'_yRu_{2-y})O_{7-z},$$

wherein

M is at least one metal selected from the group consisting of yttrium, indium, cadmium, lead, and the rare earth metals of atomic number 57–71, inclusive;

M′ is at least one metal selected from the group consisting of platinum, titanium, tin, chromium, rhodium, iridium, zirconium, antimony, and germanium,

x is a number in the range 0–2;

y is a number in the range 0–2; and

z is a number in the range 0–1, being at least equal to about x/2 when M is a divalent metal; those of the formula $M_xM'_{2-x}M''_2O_{7-z}$, wherein

M is at least one of Ag or Cu;

M′ is Bi or a mixture of at least one half Bi plus up to one half of one or more cations from among

a. bivalent Cd or Pb and

b. trivalent Y, Tl, In, and rare earth metals of atomic number 57–71, inclusive;

M″ is at least one of

a. Ru,

b. Ir, and

c. a mixture of at least three-fourths of at least one of Ru and Ir and up to one-fourth of at least one of Pt, Ti, and Rh;

x is in the range 0.10 to 0.60, and

z is in the range 0.10 to 1.0, and is equivalent to the sum of monovalent cations M and half of divalent cations in said formula; and mixtures thereof.

Re. 30,314

SUBSTITUTED PYRROLOQUINOXALINONES AND DIONES

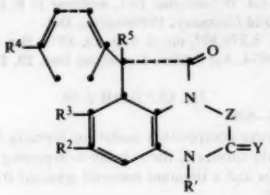
Richard E. Holmes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Original No. 4,075,206, dated Feb. 21, 1978, Ser. No. 772,154, Feb. 25, 1977. Application for reissue Apr. 26, 1979, Ser. No. 33,659

Int. Cl.[2] A61K *31/33;* C07D *487/04*

U.S. Cl. 544—344 8 Claims

1. A compound of the formula:



wherein

R′ is H or C_1–C_3 alkyl;

when taken singly, R^2 is H, C_1–C_3alkyl, C_1–C_3 alkoxy, *F* or Cl and R^3 is H; and

R^2 and R^3 when taken together with the carbon atoms to which they are attached form a benzene ring;

R^4 is H, Cl or F;

R^5 is OH, H or phenyl;

Y is O or H_2;

Z is $—CH_2—CH_2—$ or $—CHR^6—$ wherein R^6 is H or C_1–C_3 alkyl.

Re. 30,315

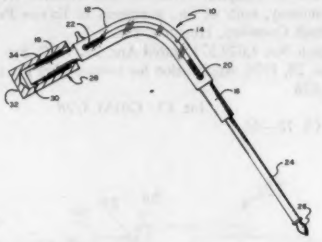
PRECISION BASE MERCURY VAPOR LAMP

Carlo F. LaFiandra, Kinnelon, N.J., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Original No. 3,878,419, dated Apr. 15, 1975, Ser. No. 425,384, Dec. 17, 1973. Application for reissue Jun. 16, 1978, Ser. No. 916,278

Int. Cl.[2] H01J *5/50*

U.S. Cl. 313—51 7 Claims



1. A gaseous discharge lamp comprising:

a. a radiation-transmitting tubular envelope defining a plasma cavity of arcuate configuration and capillary cross-section containing an ionizable substance;

b. a rigid mounting base fixedly secured to one end of said envelope having a configuration which is geometrically unique with respect to a predetermined position and spatial orientation of said envelope, *said base having a coaxial bore and said one end of said envelope terminating in a cylindrical stub of significantly smaller axial and radial dimensions than said bore, said stub being disposed and mounted in said bore in a position such as to establish a predetermined spatial relation and orientation between the envelope and the base,* whereby installation of the lamp in its operating environment automatically and reproducibly places the envelope and, concomitantly, the plasma cavity of the lamp in a predetermined position and spatial orientation relative to said environment; and

c. means for coupling the lamp to a power source for applying an operating potential to said plasma cavity.

PLANT PATENTS

GRANTED JUNE 24, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,552

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Continuation of Ser. No. 845,239, Oct. 25, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,709

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the purplish reddish high centered flower of classic open formation, bordered by a rim of strong purplish red colored petals, waxy foliage leaflets as compared with its parent "Swarthmore" U.S. Plant Pat. No. 2,444, distinct fragrance slightly musky, excellent growing characteristics as a garden and cutting flower.

4,553

APRICOT TREE

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Jan. 22, 1979, Ser. No. 5,462

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree of dwarf size, dense, semi-upright in growth and being regular and productive bearer of early maturing, medium size, freestone fruit of good eating and keeping quality; the tree is further characterized by having close leaf nodes, short heavy branches and a stocky trunk giving the appearance of an attractive ornamental.

4,554

CHRYSANTHEMUM PLANT CULTIVAR NAME: RADIANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,855

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Radiant and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned daisy capitulum type; red bronze abaxial and golden bronze adaxial ray floret color; diameter across face of capitulum ranging from 75 to 100 mm. at the maturity; uniform nine week flowering response; tall plant height; and semi-upright branching pattern.

4,555

CHRYSANTHEMUM PLANT CULTIVAR NAME: VANGUARD

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,857

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Vanguard and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, twisting at maturity; decorative capitulum type; dark yellow ray floret color, devoid of bronze overtones; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week flowering response; tall plant height; and spreading branching pattern.

4,556

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 23, 1979, Ser. No. 14,501

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Butterball and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; pompon capitulum type; dark yellow ray floret color, with minimal color oxidation; diameter across face of capitulum ranging from 40 to 45 mm. at maturity; uniform eight week flowering response; tall plant height, and semi-upright branching pattern.

4,557

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,827

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet, as shown and described, known by the variety name Alaska and characterized by the combined features of large star-shaped white flowers having blue-violet centers and tinged edges, with the flowers being supported on strong upright stems; prominent golden yellow anther cells at center of flower; medium green, large leaves, and vigorous growth habit.

PATENTS

GRANTED JUN. 24, 1980

ERRATA

For CLASS	See PATENT NO.
433–197	4,208,794
433–203	4,208,795
368–251	4,208,866
368–262	4,208,867
368–062	4,208,868
368–084	4,208,869
368–041	4,208,870
410–153	4,208,970
430–082	4,209,327
430–225	4,209,328
430–502	4,209,329
430–212	4,209,330
165–049	4,209,352
556–457	4,209,454
556–419	4,209,455
568–385	4,209,465
568–487	4,209,466
568–013	4,209,468
568–068	4,209,469
260–040 R	4,209,610
370–013	4,209,666
455–609	4,209,689
455–611	4,209,690
455–047	4,209,748
455–056	4,209,749
455–063	4,209,750
455–186	4,209,751
367–155	4,209,766

PATENTS

GRANTED JUNE 24, 1980

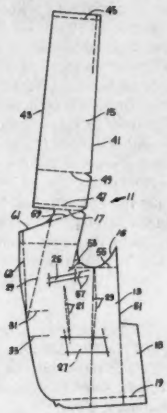
REISSUE

PATENTS

GRANTED JUNE 24, 1980

GENERAL AND MECHANICAL

4,208,742
COAT CONSTRUCTION WITH SEAMLESS SHOULDERS
Andreas M. Maos, 322 Pine St., Millbrae, Calif. 94030
Filed Oct. 2, 1978, Ser. No. 947,743
Int. Cl.[2] A41D *1/00*
U.S. Cl. 2—93 **2 Claims**

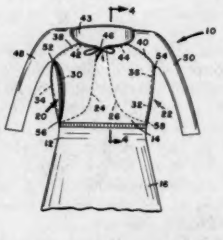


1. A garment construction for a coat or similar article comprising,

left and right side panels having a length for substantially covering a human torso, each torso panel having a front panel member and a back panel member seamlessly joined together at a transverse shoulder line, said back panel member being generally rectangular in shape with an upper lengthwise boundary thereof below the shoulder line defining a linear portion of an arm hole cut, said front panel member having a shoulder region defining an arm hole cut for attaching a sleeve, and

left and right side sleeve panels, each having a length for substantially covering a human arm, said sleeve panels for attachment by means of a seam to the arm hole cut of respective left and right side torso panels.

4,208,743
MOTHER'S GOWN WITH NURSING APERTURES
Loni S. Whitcraft, 308 Janet Rd., Reisterstown, Md. 21136
Filed May 14, 1979, Ser. No. 38,392
Int. Cl.[2] A41D *1/20*
U.S. Cl. 2—104 **10 Claims**



1. A nursing gown, comprising, a mother's garment having two nursing apertures for exposing the breasts to nurse a child without unfastening any part of said garment, said mother's garment having at least a bodice portion with armpits, a waistline, a neckline, and side seams,

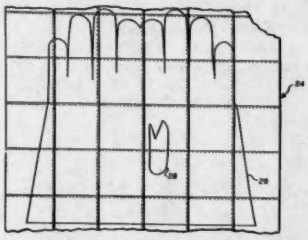
said garment having a first aperture provided in the right side thereof, said first aperture extending vertically from the armpit of said garment to the waistline of said garment;

said garment having a second aperture provided on the left side thereof, said second aperture extending vertically from the armpit of said garment to the waistline of said garment;

a first closure panel affixed to the inside of said garment, said first closure panel being attached vertically to the rearward side of said first aperture and suitably attached across the upward side to the inside of said garment and thence along a frontal neckline of said garment at least to the center of said garment, the lower edge of said first closure panel being unattached to any part of said garment; and

a second closure panel affixed to the inside of said garment, said second closure panel being attached vertically to the rearward side of said second aperture and suitably attached across the upward side to the inside of said garment and thence along a frontal neckline of said garment at least to the center of said garment, the lower edge of said second closure panel being unattached to any part of said garment.

4,208,744
GENUINE LEATHER FABRIC AND METHOD FOR MAKING SAME
Murray Strongwater, 822 Moore St., Woodmere, N.Y. 11598
Continuation-in-part of Ser. No. 767,508, Feb. 10, 1977, Pat. No. 4,100,623. This application May 5, 1978, Ser. No. 903,211
Int. Cl.[2] A41D *19/00, 19/02*
U.S. Cl. 2—163 **2 Claims**



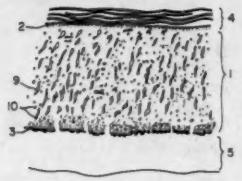
1. A genuine leather glove comprising a plurality of single layer, unsupported geometrical sections cut from genuine leather left over scrap, said sections being of selectively predetermined configurations and being secured to each other in overlapping end-to-end and overlapping side-by-side relation to form a continuous piece having ornamental characteristics imparted thereto by said secured together sections of predetermined geometrical configuration, said piece being cut into a plurality of blanks assembled together to define a conventional glove having a palm side, a back side, four discrete finger stalls and a thumb stall, whereby the entire glove has imparted thereto the ornamental characteristics of said continuous piece, each of said blanks including a plurality of said unsupported geometric sections secured to each other in said overlapping relation.

4,208,745

VASCULAR PROSTHESES COMPOSED OF POLYTETRAFLUOROETHYLENE AND PROCESS FOR THEIR PRODUCTION

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 760,789, Jan. 19, 1977, abandoned. This application Aug. 4, 1977, Ser. No. 821,859
Claims priority, application Japan, Jan. 21, 1976, 51-6200
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.[2] A61F *1/24*; B29C *17/02*
U.S. Cl. 3—1.4 **19 Claims**



1. A vascular prosthesis comprising a tubing of porous polytetrafluoroethylene, said polytetrafluoroethylene tubing having a fibrous structure of nodes and fibers connecting the nodes together and having a structure in which the fibrous structure at the inside surface of the tubing is finer than the fibrous structure at the outside surface of the tubing.

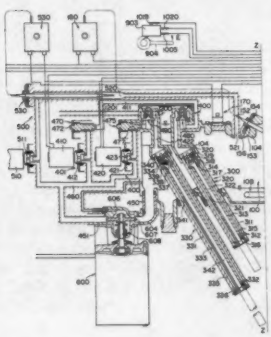
11. A process for producing a vascular prosthesis of a fibrous structure, which comprises extruding unsintered polytetrafluoroethylene containing a liquid lubricant into a tubing, stretching the tubing at least in the longitudinal direction of the tubing, fixing the tube to prevent shrinkage thereof during heating and then heating the stretched tubing so that the temperature of the outside surface of the tubing is at least 327° C., and the temperature of the inside surface of the tubing is lower than that of the outside surface.

4,208,746

HUMAN BODY IRRIGATION SYSTEM

Naoki Minamoto, Kariya; Tomio Oguma, Anjyo, and Naoji Sakakibara, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 15, 1978, Ser. No. 915,850
Claims priority, application Japan, Jun. 17, 1977, 52-72648; Jun. 17, 1977, 52-72649; Jun. 17, 1977, 52-72650
Int. Cl.[2] E03D *9/08*; F24H *1/00*
U.S. Cl. 4—448 **14 Claims**



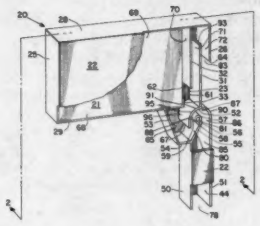
1. Human body irrigation system comprising a heated water tank adapted to contain a quantity of scouring water and including a water heating unit disposed therein, a water temperature sensor disposed in the tank for sensing the water temperature to control the heating unit, water supply passage means providing a communication between a source of water and the tank and including water supply control means disposed therein, a detector for detecting when the quantity of the tank water reaches a given value and for operating the supply control means, a heated water ejection unit including manual operating means, a nozzle carrying member which causes the water to be ejected toward part of a human body, heated water ejection passage means providing a communication between the tank and the ejection unit, means disposed within the ejection passage means and responsive to said manual operating means to control the ejection of the water, a water agitation passage means providing a communication between first and second opening means formed in the tank for circulating the water therebetween for agitation of the heated water contained in the tank, pump motor means disposed in the ejection passage means and the agitation passage means and having a water discharge and agitation function, and means for controlling said pump motor means during said agitation function in response to said water temperature sensor said pump motor means comprising a single pump motor unit which discharges the water into the ejection and the agitation passage means and said agitation passage means including valve means which block the agitation passage means in response to an operation of the ejection control means.

4,208,747

PASSIVE DOSING DISPENSER EMPLOYING TRAPPED AIR BUBBLE TO PROVIDE AIR-LOCK

Robert S. Dirksing, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 897,469, Apr. 18, 1978, abandoned. This application Jan. 11, 1979, Ser. No. 2,524
Int. Cl.[2] E03D *9/02*, *9/03*
U.S. Cl. 4—228 **21 Claims**



1. A passive dosing dispenser for containing a quantity of a solution isolated from a body of liquid in which said dispenser is immersed and for causing a predetermined dose-volume of said solution to issue from said dispenser in response to the level of said body of liquid being lowered from a first elevation to a second elevation, said dispenser comprising:

a. an internal reservoir for containing a quantity of said solution;

b. liquid syphoning means in fluid communication with said reservoir for conveying a predetermined dose-volume of said solution from said reservoir into said body of liquid in which said dispenser is immersed in response to the level of said body of liquid being lowered from said first elevation to said second elevation, said syphoning means including passive means for providing a first air-lock in the path of fluid communication between said reservoir and said syphoning means when said dispenser is immersed in said body of liquid; and

c. an air vent in fluid communication with said reservoir, said air vent including passive means for providing a second air-lock in the path of fluid communication between said reservoir and said air vent when said dispenser

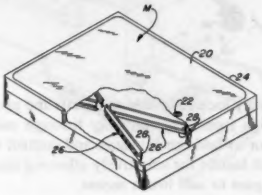
is immersed in said body of liquid to a depth sufficient to block said air vent, whereby said first air-lock and said second air-lock serve to isolate said solution from said body of liquid until such time as said body of liquid is lowered from said first elevation to said second elevation.

4,208,748

WATERBED MATTRESS

James L. Lobach, Broomfield, Colo., assignor to Applied Vinyl Corporation, Denver, Colo.

Filed Nov. 3, 1978, Ser. No. 957,572
Int. Cl.[2] A47C *21/08*
U.S. Cl. 5—451 **12 Claims**



1. A fluid-containing mattress which controls fluid motion resulting from the weight of a user upon the fluid-filled mattress, said mattress comprising:

chamber means for containing the fluid;

a one-way valve connected within said chamber means to substantially reduce fluid flow in a first direction through said valve while permitting fluid flow in a second direction, opposite to said first direction, through said valve; and

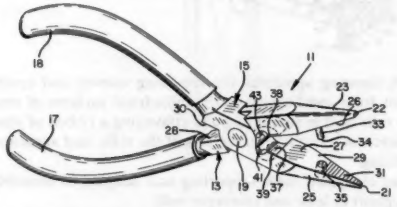
bypass means within said chamber means for allowing fluid to flow in said first direction to circumvent said valve and return the fluid to all portions of said chamber means.

4,208,749

FISHERMAN'S PLIERS

James R. Hermann, 1728 SE. Lambert St., Portland, Oreg. 97202, and Gary S. Amerman, 27500 Wilson River Hwy., Tillamook, Oreg. 97141

Filed Oct. 10, 1978, Ser. No. 949,780
Int. Cl.[2] A01K *69/00*; B25F *1/00*
U.S. Cl. 7—106 **5 Claims**



1. A fisherman's pliers comprising:

two crossed members rotationally pivoted at their intersection to form a pliers, each member comprising a jaw section and a handle section;

each jaw section having a planar meeting face, a straight-edge cutter, and a half-moon cutter arranged for cooperative action with corresponding portions of the other jaw section; and

one jaw section having a punch pin, and the other jaw section having a die hole sized and positioned for receiving said pin when said jaw sections are closed together, thereby defining a punch;

said planar meeting faces rotating between an angularly spaced relationship and a substantially parallel abutting relationship with one another upon pivoting movement of said two crossed members;

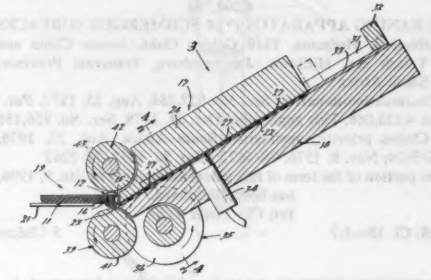
said punch pin and die hole being positioned on the planar meeting faces of said jaw sections and constructed to interfit without conflict as said jaw sections are rotated toward one another.

4,208,750

METHOD AND CONSTRUCTION FOR BINDING CALENDARS AND THE LIKE

Ernst Pfaffle, Wuerttemberg, Fed. Rep. of Germany, assignor to Hans Sickinger Co., Pontiac, Mich.

Filed Dec. 11, 1978, Ser. No. 968,271
Int. Cl.[2] B42B *5/12*
U.S. Cl. 11—1 A **18 Claims**



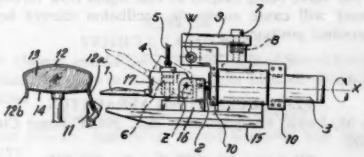
1. A method for binding wide groups of sheets as calendars, comprising the steps of forming a series of elongated apertures along one edge of the sheet group, placing said edge at a binding station, providing unconnected flat binding strips adjacent said apertures, providing stationary binding strip deforming means between each binding strip and its aperture which is clear of the aperture, and feeding the binding strips toward the apertures while simultaneously deforming the binding strips with said stationary means just before they enter the apertures so as to cause them to have a coiled shape, whereby the binding strips will be fed in curved fashion through the apertures, their ends will overlap to form individual circular coils, and the bound sheet group may be removed without disturbing said stationary binding strip deforming means.

4,208,751

DEVICE FOR FOOTWEAR UPPER ASSEMBLING ON RESPECTIVE LASTS OR SHOE TREES

Gaetano Pedretti, Vigevano, Italy, assignor to Cerim S.p.A., Vigevano, Italy

Filed Oct. 20, 1977, Ser. No. 844,105
Claims priority, application Italy, Apr. 18, 1977, 22548 A/77
Int. Cl.[2] A43D *21/00*
U.S. Cl. 12—10 **1 Claim**



1. An improved apparatus for assembling a footwear upper on respective lasts, particularly for sole connection of the last or shoe tree, employing plier means defined by gripping members for clamping an edge portion of said upper and moving

said edge portion downward on to said last, shaping members associated therewith for positioning said edge on said upper to the last and on to a footwear cork sole, said improvement comprising: said plier means being disposed to cooperate with said shaping members formed of a pair of complementary longitudinal elements laterally arranged at the last, said elements being independently rotatable through fluid dynamic means to move about the longitudinal axis for stretching said upper at a ball portion thereof and being disposed substantially transverse to said last; said shaping members are secured to respective supports by adjustment means enabling the displacement thereof in one direction along a plane parallel to the last; and a support member carrying said elements is pivotable with respect to an axis to said supports, for rotation about said axis by screw adjustment.

4,208,752

CLEANING APPARATUS FOR SUBMERGED SURFACES

Helmut J. Hofmann, 1310 Golden Oaks, corner Claim and Yettah Sts., Hillbrow, Johannesburg, Transvaal Province, South Africa

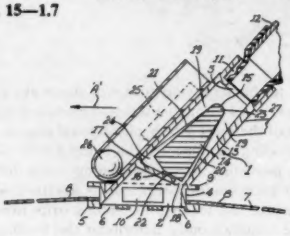
Continuation-in-part of Ser. No. 827,185, Aug. 23, 1977, Pat. No. 4,133,068. This application Oct. 31, 1978, Ser. No. 956,151

Claims priority, application South Africa, Aug. 23, 1976, 76/5024; Nov. 8, 1976, 76/6672; May 30, 1977, 77/3262

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.[2] E04H *3/20*

U.S. Cl. 15—1.7 **5 Claims**



1. Apparatus for cleaning submerged surfaces, comprising:
(a) a balanced operating head having an inlet and an outlet defining respective inlet and outlet axes,
(b) the outlet adapted to be swivelably connected to a longitudinally resilient and flexible suction hose,
(c) the inlet axis being inclined at an angle of between thirty degrees and sixty degrees to that of the outlet axis,
(d) a passage through the head from inlet to outlet,
(e) an oscillatable valve in the head adapted to alternately open and close said passage,
(f) a baffle plate in the head between the inlet and the valve to form a restricted suction connection between the inlet and outlet around the valve when the passage is closed, the connection being as restricted as practical commensurate with proper valve movement, and
(g) the valve being shaped so that liquid flow through the head will cause automatic oscillation thereof between terminal positions.

4,208,753

FLOOR CLEANING APPARATUS

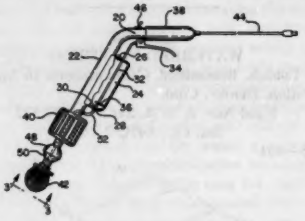
Helen M. Lewis, 400 Park Ave. Apt. 201, Calumet City, Ill. 60409

Filed Oct. 31, 1978, Ser. No. 955,931

Int. Cl.[2] A46B *13/04*

U.S. Cl. 15—29 **4 Claims**

1. An apparatus for manually treating a floor comprising in combination an elongated hollow shaft bent near one end at an obtuse angle to form a handle portion at said end for a user to hand operate said apparatus; a container removably secured to said shaft for storing cleaning liquid therein; an electric motor secured axially to the other end of said shaft, a rotatable connector axially connected to said motor; a brush means removably connected axially to said connector and rotated thereby; a



conduit partially located within said shaft and providing liquid communication from said container through said motor and said connector to said brush means; and control means associated with said handle for selectively allowing liquid from said container to pass to said brush means.

4,208,754

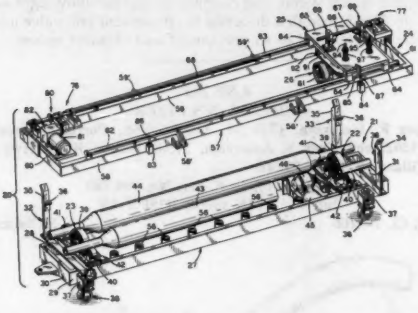
CLEANING APPARATUS FOR CONVEYOR ROLLS

Earl A. Hille, Elmore, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jun. 6, 1979, Ser. No. 46,105

Int. Cl.[2] A46B *13/02*

U.S. Cl. 15—88 **10 Claims**



1. A cleaning apparatus for removing uneven and crusty deposits from and burnishing the cylindrical surfaces of conveyor rolls used in supporting and conveying a ribbon of glass in a direction transverse to the axis of the rolls, said apparatus comprising
(a) an elongated main supporting unit adapted to rotatably support at least one conveyor roll;
(b) means affixed to said main unit for rotatably supporting said one conveyor roll;
(c) an elongated cleaning unit removably mounted on said main unit above said conveyor roll;
(d) a carriage movably mounted on said cleaning unit and adapted to travel along the length of and over said conveyor roll;
(e) means mounted on said cleaning unit for reciprocably moving said carriage along the length thereof;
(f) a brush wheel mounted on said carriage adapted to be rotatably driven and positioned so as to contact the surface of said conveyor roll along the length thereof;
(g) means for adjusting the pressure with which said brush wheel bears against said conveyor roll; and

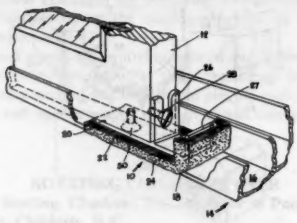
(h) a motor affixed on said mounting means for rotatably driving said brush wheel.

4,208,755

TRACK WIPER FOR SLIDING SHOWER DOOR ASSEMBLY

L. Clay Shepherd, P.O. Box 85, Soulsbyville, Calif. 95372

Filed Feb. 5, 1979, Ser. No. 9,147
Int. Cl.[2] A46B *3/00*
U.S. Cl. 15—160 **14 Claims**



1. A wiper for clearing the track of a sliding door or window assembly comprising,

a fluid dispersive pad having a width dimension, and

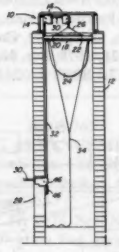
means for coupling said pad to the bottom edge of a sliding door or window assembly so that the width dimension of said pad is in substantially complete contact with the bottom of a groove defined in an elongated track within which said door or window slides.

4,208,756

CHIMNEY CLEANER

Samuel C. Smith, 210 Hartman Rd., Newton Centre, Mass. 02159

Filed Jul. 31, 1978, Ser. No. 910,734
Int. Cl.[2] F23J *3/00*
U.S. Cl. 15—243 **6 Claims**



1. A chimney cleaner for scraping the soot from the interior sidewalls of a chimney comprising:

an open frame of generally rectangular shape contoured to fit the interior dimensions of the chimney;

an upward sloping lip secured to said frame and extending to its outer perimeter edges;

a sandbag secured between the base of said frame and said upper lip, and extending around the outer peripheral edges of said frame; a portion of said sandbag extending outwardly beyond said lip and frame to define a scraping surface;

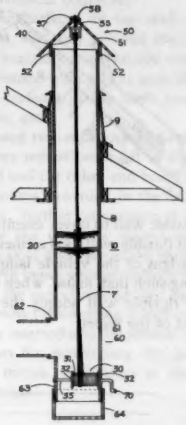
a soot collection bag secured to the underside of said frame; and means to raise and lower said chimney cleaning apparatus vertically within a chimney.

4,208,757

CHIMNEY FLUE CLEANING APPARATUS

John E. Baugh, and Patricia A. Baugh, both of 5500 Pierce Park La., Boise, Id. 83703

Filed Feb. 8, 1979, Ser. No. 10,386
Int. Cl.[2] F23J *3/00*
U.S. Cl. 15—249 **2 Claims**



1. Improved chimney flue cleaning apparatus comprising:

pulley support means engaging the uppermost terminal end of a flue;

a pair of horizontally disposed pulleys;

cable tension adjustment means connecting said pulleys to said support means and operable to adjust the distance between said pulleys and said support means;

a horizontally disposed drum rotatably mounted within the flue, said drum including a single groove, substantially V-shaped in cross-section, helically wound about the exterior of said drum to define a multiplicity of adjacent and horizontally disposed threads;

means external to said flue for rotating said drum;

an endless cable threaded about said pulleys and said drum and operable to move in vertically opposing directions upon rotation of said drum; and

a brush including an elongated, substantially cylindrical housing having a multiplicity of radially extending flexible brush bristles adjacent each end of the housing operable to contact the interior surface of the flue and a first pair of horizontally extending, vertically spaced arms, each arm provided with a vertically aligned clamp sleeve adapted to securely engage said cable and a second pair of horizontally extending, vertically spaced arms having vertically aligned apertures for slidingly engaging an opposing portion of said cable, said second pair of arms oppositely disposed from said first pair of arms.

4,208,758

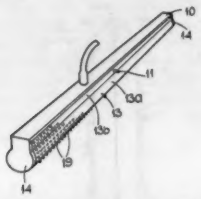
VEHICLE LAMP WIPER

John P. Timmis, and Anthony Johnson, both of Sutton Coldfield, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 8, 1978, Ser. No. 940,612
Claims priority, application United Kingdom, Sep. 20, 1977, 39163/77
Int. Cl.[2] B60S *1/46, 1/02*
U.S. Cl. 15—250.04 **8 Claims**

1. A motor vehicle lamp wiper comprising a body including a rigid support, means for connecting the relatively rigid support to a drive member which, in use, effects movement of the wiper, a chamber in the body, a flexible wall to the chamber,

said flexible wall having a pair of spaced mutually parallel planar wall portions and an arcuate section which is partly circular in transverse cross-section, said arcuate section having a diameter greater than the separation between said planar wall portions, at least one inlet and at least one outlet to the chamber, and a multiplicity of scouring or scrubbing elements an-



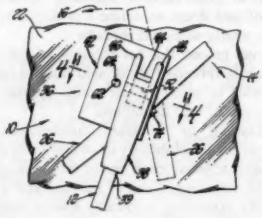
chored to the flexible wall to cover essentially all of the external surface of said flexible wall, said elements serving, in use, to engage against a lens of the vehicle lamp to be cleaned, the arrangement being such that, in use, when the chamber is filled with liquid, the flexible wall adopts the profile of the lens during movement of the wiper.

4,208,759

WINDSHIELD WIPER ATTACHMENT

Raymond F. Nixon, 760 Orion Rd., Apt. 232, Lake Orion, Mich. 48035, and Chris Nixon, 5880 Sawmill Lake Rd., Ortonville, Mich. 48462

Filed Jul. 17, 1978, Ser. No. 925,030
Int. Cl.[2] A47L *1/02*; B60S *1/04, 1/44*
U.S. Cl. 15—250.23 **9 Claims**



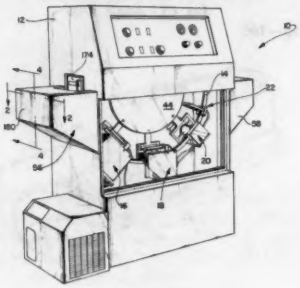
1. A windshield wiper mechanism adapted to be connected to a windshield wiper operating arm and carry a windshield wiper blade, said mechanism comprising: an operating arm attachment member detachably connectable with the wiper operating arm; a wiper blade carrying member having a wiper blade attachment portion; means pivotally securing said members together at a location laterally spaced from both said wiper blade attachment portion and the upper operating arm so that pivotal movement of said members with respect to each other causes pivotal movement of said wiper blade with respect to said wiper operating arm whereby two different wiping paths are traversed when the wiper operating arm is moved in opposite directions; and stop means for limiting the pivotal movement of said wiper blade carrying member between first and second angularly spaced positions with respect to the pivotal axis between said members; said attachment member, the connected operating arm, the attachment portion and the carried blade being aligned in a direction normal to a windshield throughout the pivotal movement.

4,208,760

APPARATUS AND METHOD FOR CLEANING WAFERS

Jeffrey L. Dexter, North Dartmouth; William E. Fairweather, Mattapoisett, and Harold R. Shurtleff, Buzzards Bay, all of Mass., assignors to Huestis Machine Corp., Bristol, R.I.

Filed Dec. 19, 1977, Ser. No. 861,989
Int. Cl.[2] A46B *13/04*
U.S. Cl. 15—302 **29 Claims**



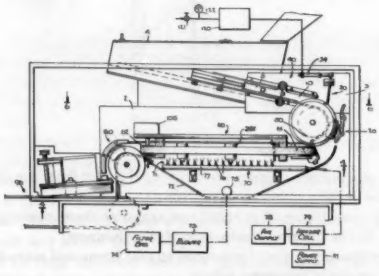
1. Apparatus for cleaning material wafers of disc-like form comprising, a frame, an arcuate travel path disposed with respect thereto, said path having a plurality of wafer treatment stations disposed at spaced locations therealong, including a wafer load station, a wafer discharge station and multiple wafer cleaning stations disposed therebetween, said path defined by a track supported by said frame and adapted to contact and at least partially support said wafer while positioned in said cleaning stations, a bracket assembly adapted to receive said wafer in a generally vertical disposition, said bracket assembly including inwardly projecting fingers for supporting said wafer by contacting opposite side edges thereof, and means for indexing said bracket assembly with respect to said track along said path through each of said stations.

4,208,761

BOTTLE CONVEYING AND CLEANING APPARATUS

Alexandru D. Ionescu, Fairfield, Conn., assignor to New England Machinery, Inc., Bridgeport, Conn.

Filed Jan. 24, 1978, Ser. No. 871,940
Int. Cl.[2] B08B *5/02, 5/04*
U.S. Cl. 15—304 **24 Claims**



1. A bottle conveying and cleaning apparatus comprising:
a. a first vertical rotary conveyor, constructed and arranged to carry through at least a lower portion of the circumferential extent thereof a succession of oriented bottles, each of said bottles having an open-end trailing disposition upon entering said lower portion of said conveyor;
b. means for reorienting each of said bottles to an open-end generally radially outward disposition during their move-

ment through said lower portion of said rotary conveyor so that the open end of each bottle faces downward when such bottle is at the bottom of said rotary conveyor;

c. a linear conveyor having an upstream end positioned adjacent to the bottom of said first rotary conveyor, said linear conveyor being constructed and arranged to grasp each of said bottles at the bottom of said first rotary conveyor and carry such bottle away from said rotary conveyor while maintaining its open-end downward orientation during its carriage by said linear conveyor;

d. cleaning means positioned adjacent to and associated with said linear conveyor for removing foreign material from said bottles during the carriage thereof by said linear conveyor; and

e. removal means for removing each of said bottles from said linear conveyor means at the downstream end thereof, inverting each of said bottles and placing such bottle in an open end up orientation onto an output conveyor.

4,208,762

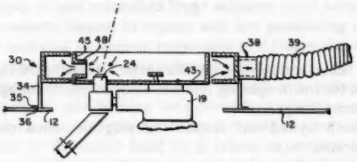
ROTATING COILER CLEANER

Bobby L. Starling, Charlotte, N.C., assignor to Pneumafil Corporation, Charlotte, N.C.

Filed Jan. 15, 1979, Ser. No. 3,301

Int. Cl.[2] D01H *5/66*

U.S. Cl. 15—312 R **6 Claims**



1. Apparatus for capturing lint, dust, fly and the like particulate matter released by the passage of sliver into the trumpet of an orbital coiler having a head and a trumpet supported for movement in a generally circular path about the head, said apparatus comprising: a plenum arranged adjacent the path of movement of the trumpet, said plenum having an annular fixed outer section with an air outlet, and a rotating inner section with an air inlet adjacent and moving with the trumpet, and a suction connection to the outlet of said outer plenum section.

4,208,763

PIVOT BEARING ARRANGEMENT FOR DOORS

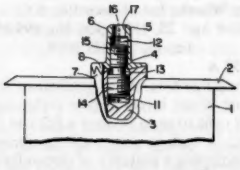
Gerhard Schröder, Tiefenbronn, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,705

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737666

Int. Cl.[2] E05D *7/08*

U.S. Cl. 16—151 **9 Claims**



1. In a pivot bearing arrangement, comprising:

a door closer;

a shaft journal rotatably supported in the door closer;

a journal extension connected in the axial direction for rotation with the shaft journal, the free end of this journal extension adapted to be connected with a door;

wherein the shaft journal and the journal extension are connected so that they are mutually nonrotatable;

wherein the improvement comprises:

mutually facing end surfaces on the shaft journal and the journal extension, said end surfaces matingly interfitting or provide said mutually nonrotatable connection;

axially aligned threaded bore means provided in the mutually facing end surfaces of the shaft journal and of the journal extension; and

a threaded pin having two ends, one end being inserted into the threaded bore means provided in the end surface of the shaft journal and the other end being inserted into the threaded bore means provided in the end surface of the journal extension, further comprising at least three teeth distributed over the mutually facing end surfaces and projected in the axial direction of the shaft journal, lateral flanks on the teeth being aligned radially with respect to a center point on the axis of rotation on the shaft journal, a shape-mated means for coupling a tool on an end face of the threaded pin inserted into the journal extension, and an axial bore means for penetrating the journal extension, said axial bore means terminating in the axially aligned threaded bore means.

4,208,764

POULTRY EVISCERATING METHOD

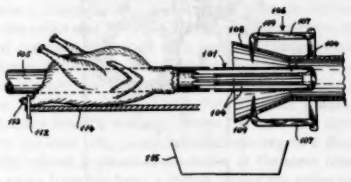
Kjeld Loth, and Peter Loth, both of 4, Elmegardsvej, DK-9460 Skovsgard, near Brovst, Denmark

Filed Dec. 9, 1977, Ser. No. 859,218

Claims priority, application Denmark, Dec. 17, 1976, 5719/76; Dec. 17, 1976, 5720/76

Int. Cl.[2] A22C *21/06*

U.S. Cl. 17—45 **1 Claim**



1. A method for automatic evisceration of a killed poultry comprising the steps of clamping the poultry, with the belly up, by its tail head to a substantially horizontal supporting plate, and eviscerating the poultry by beginning from the rear of the poultry and moving forwardly through the neck cavity, said clamped tail head retaining said poultry during evisceration.

4,208,765

TWO RAIL OVERHEAD CONVEYOR DEVICE

John C. Denefe, 10832 Stone Canyon Rd., Apt. 2402, Dallas, Tex. 75230

Filed Jan. 12, 1978, Ser. No. 869,006

Int. Cl.[2] A22B *5/00*

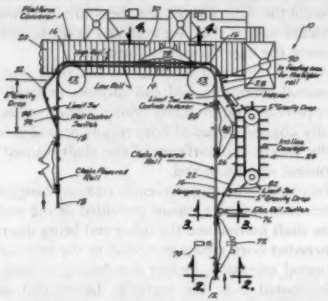
U.S. Cl. 17—45 **4 Claims**

1. A method for transporting animal carcasses of various sizes for simultaneously eviscerating at a uniform height above an eviscerating area on a two rail overhead conveyor device having an upper and lower rail, comprising,

sensing the depth of an animal carcass,

directing the taller carcasses to the upper rail and the shorter carcasses to the lower rail, and

propelling at the same speed by a common drive chain means the taller carcasses along the upper rail and the



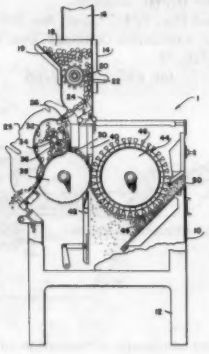
shorter carcasses along the lower rail over the eviscerating area.

4,208,766

ELECTRIC CLUTCH FEEDER DRIVE FOR SEED COTTON PROCESSING MACHINERY

Arthur H. Richardson, East Bridgewater, Mass., assignor to Murray-Carver, Inc., Dallas, Tex.

Filed Jul. 13, 1978, Ser. No. 924,334
Int. Cl.[2] D01B *1/08*
U.S. Cl. 19—64.5 **6 Claims**



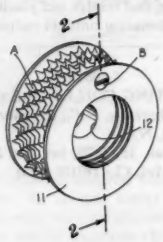
1. In a cotton processing machine including stationary support structure, saw cylinder comprising a plurality of axially spaced apart circular saws supported by the stationary support structure of rotation about a fixed horizontal axis, and a gratefall including a plurality of parallel members extending in axial spaces between adjacent saws partially above the fixed horizontal axis of rotation, a feed hopper and feed chute mounted on the support structure in communication with the gratefall for feeding connected cotton fibers and cottonseeds to the gratefall, a feed roll shaft having a feed roller and paddles mounted in the hopper and turnable for feeding cottonseed and fibers to the gratefall, a float shaft positioned above the gratefall parallel to the horizontal axis on which the saw cylinder is mounted, means overlying the gratefall and the float shaft to urge cottonseeds and fibers toward the float shaft and gratefall and an arm connected to the means for urging the means toward the float shaft and gratefall, the improvement comprising an electric clutch drivingly connected to the feed roll shaft for connecting a drive to the feed roll shaft and control means connected to the arm for controlling engagement of the electric clutch when the arm moves toward the float shaft and the gratefall, a speed reducer connected between the clutch and the feed roll shaft for reducing speed between the drive means and the feed roll shaft, means to drive the float shaft, and drive means interconnecting the float shaft and the electric clutch whereby the float shaft drives the speed reducer and feed roll shaft upon drive energization of the electric clutch.

4,208,767

RECLOTHABLE BEATER ROLL FOR OPEN END SPINNING MACHINES

Karl H. Schmolke, Zwerenberg, Fed. Rep. of Germany, assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Jun. 23, 1978, Ser. No. 918,484
Int. Cl.[2] D01G *15/14*
U.S. Cl. 19—97 **1 Claim**



1. A beater roll having metallic surface wound card clothing thereon for use in opening fibers in an open end spinning apparatus comprising:

a smoth cylindrical surface carrying the card clothing thereon;

a set having been placed in said metallic card clothing during the application of such clothing in successive convolutions to the cylindrical surface;

means removably securing each end of said metallic card clothing to said roll under sufficient tension to fasten said card clothing tightly to said cylindrical surface with said convolutions in spaced relative to each other;

a segment formed in an underside of a base formed by a shoulder and adjacent tooth portion of said metallic card clothing by reason of said set having been applied to such an extent as to cause the metallic card clothing to correspond generally in diameter to said cylindrical surface; and

a sealant filling each space defined between said segments and said cylindrical surface so as to present a concave meniscus extending between said cylindrical surface and said base entirely along each side thereof;

whereby fiber entrapment in said space is avoided and consequent loading of said beater roll precluded, and whereby said beater roll is readily reclothable.

4,208,768

CAN COILER MECHANISM CAN CHANGER

Alvin T. Bonner, Sr., Mauldin, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Apr. 25, 1978, Ser. No. 899,857
Int. Cl.[2] D01H *9/18*
U.S. Cl. 19—159 A **5 Claims**

1. In a carding machine coiler mechanism having a coiler head for placing sliver in successive coiler cans, means for changing coiler cans so as to remove a full can from the coiler head and replace it with an empty can comprising:

means for positioning a plurality of circumferentially spaced cans carried for rotary indexing movement about a vertical standard permitting manual removal of a full can therefrom and reception of an empty replacement can thereby;

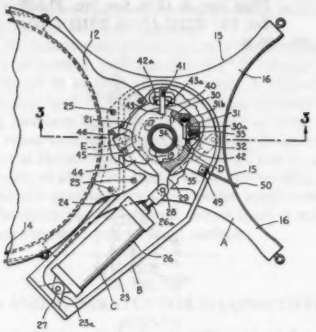
a housing fixed to said coiler head and carried adjacent the top of said vertical standard;

an extensivle linear actuator for producing linear motion pivoted on one end thereof on said housing;

sensing means actuating said linear actuator when a can changing operation should take place;

a cage member;

ratchet means carried by said cage member pivotally connected to said extensible linear actuator in an advancing movement thereof to engage said can positioning means for indexing movement responsive to a return movement of said extensible linear actuator; and



braking means locking said can positioning means with respect to said housing for positively positioning successive cans in a predetermined position each time with respect to the coiler head on a return movement of said extensible linear actuator.

4,208,769

BREAKING MACHINE

André Morel, Cours la Ville, France, assignor to Constructions Mecaniques F. Laroche et Fils, Cours la Ville, France

Continuation of Ser. No. 832,552, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 664,138, Mar. 5, 1976, abandoned. This application May 17, 1978, Ser. No. 906,776

Int. Cl.[2] D01G *9/16*

U.S. Cl. 19—204 **12 Claims**

1. A modular breaking machine comprising at least one feed conveyor module and at least one separator module connectable in series with said feed conveyor modules each of said separator modules comprising:

a spiked drum rotatably driven about an axis of rotation to open fibers;

feeding means for feeding fibers to be opened to said spiked drum including a rotatable roller and guide means defining a space between said rotatable roller and said guide means and further including spring means urging said roller and said guide means into engagement with a regulatable spring pressure;

first separator means receiving the fibers opened by said spiked drum for separating the insufficiently opened fiber unusable waste and unbreakable waste from the sufficiently opened fibers;

a recycling conveyor receiving the insufficiently opened fibers and said unusable and unbreakable waste for transporting them to said feed conveyor;

means for receiving the sufficiently opened fibers from said spiked drum, said receiving means forming said sufficiently opened fibers into layers;

said at least one feed conveyor module further comprising a lower conveyor means for transporting said insufficiently broken fibers received from said recycling conveyor of said separator module to said separator module feed means.

4,208,770

BELT CLAMP FOR A VEHICLE PASSENGER RESTRAINT BELT SYSTEM

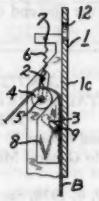
Juiiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,906

Claims priority, application Japan, May 22, 1978, 53-67808

Int. Cl.[2] A62B *35/00*; B60R *21/10*; F16B *2/14, 2/16*

U.S. Cl. 24—136 K **3 Claims**



1. A belt clamp for a vehicle passenger restraint belt system comprising a frame having a pair of spaced-apart sides and a base; a roller slidably received in a pair of slots in the frame sides for movement between a releasing position and a clamping position; a clamp member mounted between the frame sides adjacent the roller and having a wedge surface engaged by the roller and coacting therewith such that the clamp member is wedged toward the frame base by the roller upon movement of the roller toward the clamping position; cooperating guide means on the clamp member and the frame for guiding the clamp member toward and away from the base in a direction oblique to the base, the clamp member moving in a direction toward the release position of the roller at the same time that it moves away from the base; a spring urging the roller toward the release position; and a spring urging the clamp member in a direction toward the roller, whereby both the clamp and roller are normally urged toward releasing positions such that a belt led between the base and the clamp member and thence around the roller and away from the roller in a direction exerting a force on the roller in a direction toward the clamping position is free to move through the belt clamp and whereby an abnormally high pull-out force on the belt shifts the roller toward the clamping position and clamps the belt between the clamping member and the frame base by a combination of the wedging action of the roller on the wedge surface of the clamp member and the guiding action of the guide means.

4,208,771

LOCK FOR SAFETY BELTS IN MOTOR VEHICLES

Dieter Biller, Leinzell, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

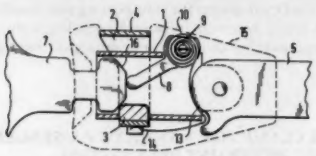
Filed Jan. 19, 1978, Ser. No. 870,851

Int. Cl.[2] A44B *11/25*

U.S. Cl. 24—230 AL **3 Claims**

1. In a lock for safety belts in motor vehicles having a base body with a lock latch for insertion and locking a plug-in blade and a closing and ejection spring which acts to hold the lock

latch in closed position and to eject the plug-in blade upon unlocking, the improvement comprising a rotatably supported ejection lever disposed in the path of insertion of the plug-in blade and movable by it, and a closing and ejection spring in the form of a single, spirally-shaped spring having coils of continuously increasing diameters wound as a spiral with the spiral of the spring disposed on and supported by the rotatably



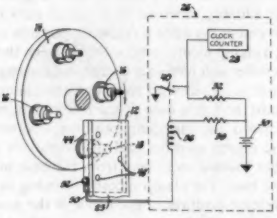
supported ejection lever at the region of its rotatable support, and having one end of the spring acting on the lock latch to hold it in closed position and the other end of the spring acting on the rotatably supported ejection lever to eject the plug-in blade upon unlocking, and wherein the ejection lever has a pivot pin with which the one end of the closing and ejection spring is engaged.

4,208,772

AUTOMATIC METAL WORKING MACHINE PART COUNTER

Daniel E. Earnhardt, and Robert L. Hogeman, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1978, Ser. No. 958,245
Int. Cl.[2] B23B *9/04, 13/12*
U.S. Cl. 29—37 R **2 Claims**



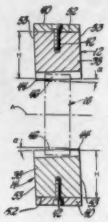
1. A multiple spindle automatic screw machine comprising a frame supporting indexable spindle carrier means, a plurality of work spindle means rotatably supported by said spindle carrier means for releasably holding and revolving bars of metal work stock to permit machining thereof into prescribed parts wherein the metal bars are thereby electrically grounded to said frame, work stock feed means mounted on said frame for advancing the metal bar in each said work spindle means at a fixed location relative to said carrier means, a metal stock feed stop plate mounted on said frame and having a front side for stopping advancement of each of the bars at said location preliminary to machining of a part therefrom, and part counter means for counting the number of parts machined comprising electrically operated counter means and circuit means for operating said counter means, said circuit means including switch means having a groundable operating terminal connected to said metal stock feed stop plate, said switch means operable to effect a count by said counter means each time said terminal is grounded, and rigid insulation means between the backside of the stop plate and said frame and also extending all about the edge of said stop plate for rigidly insulating said metal stock feed stop plate from said frame and also from metal chips directed toward the edge thereof whereby when the bar in each said work spindle means is stopped by the insulated metal stock feed stop plate there is also effected grounding of the terminal to the frame to operate said switch means to effect a part count.

4,208,773

BURNISHING RACK

James T. Killop, Warren, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Filed Apr. 6, 1979, Ser. No. 27,625
Int. Cl.[2] B21C *37/30;* **B21D** *17/04*
U.S. Cl. 29—90 B **10 Claims**



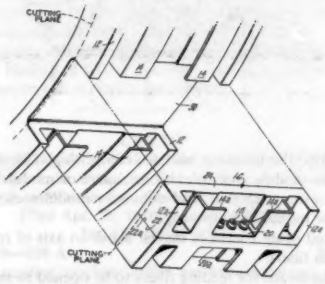
1. A rack for burnishing toothed gears comprising an elongated body including first and second rack sections; each of said rack sections having a toothed forming face for meshing with the teeth of a gear such that the meshing burnishes the gear teeth and provides the rotary support for the gear as the burnishing takes place; and the toothed forming face of one of the rack sections being slightly inclined with respect to the toothed forming face of the other rack section in a lateral direction along the elongated length of the body so as to provide each burnished gear tooth with accentuated axial crowns intermediate the axial ends of the tooth.

4,208,774

PROCESS FOR WELDING FLANGES TO A CYLINDRICAL ENGINE CASING HAVING A PLURALITY OF SPACED RAILS AND RIBS

Peter E. Voyer, Tolland; Thomas C. Walsh, New Britain, and Joseph Grzyb, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1978, Ser. No. 964,104
Int. Cl.[2] B23P *15/00*
U.S. Cl. 29—156.4 R **3 Claims**



1. The method of forming a casing for a gas turbine engine wherein the casing includes a cylinder having a plurality of circumferentially axially spaced radially extending ribs and "L" shaped rails, including the steps of:

cutting a pair of axial diametrically opposed slots extending the length of the cylinder on the outer diameter thereof,

said cylinder being formed with a plurality of circumferentially axially spaced radially extending ribs and "L" shaped rails;

forming a pair of mating members each having an axially extending base portion and each having a mating face formed on one edge of a radially extending portion;

machining the outer surface of said mating member to form radially extending ribs and "L" shaped rails corresponding to the ribs and "L" shaped rails of the cylinder;

drilling a plurality of complementary axially spaced holes in the radially extending portion of said mating members and bolting each of said pair together;

inserting the bolted mating members into said slots formed in the step of cutting, with the ribs and "L" shaped rails of the cylinder in mating members being in aligment with one another, said "L" shaped rails of the cylinder and the mating members being spaced from one another; and

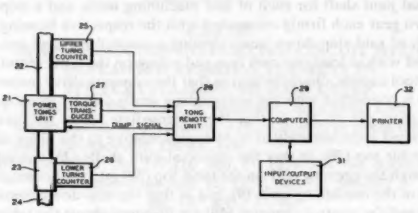
electron beam welding each of the mating members to the cylinder at the interface of the wall of the slot by applying the stream of electrons axially along the welding surface wherein the spacing allows unimpeded application of the beam between the "L" shaped rails as there is translation between the beam and welding surface.

4,208,775

METHOD AND APPARATUS FOR MAKING THREADED JOINTS

Russell L. McCombs, San Antonio, and James V. Motsinger, Austin, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Sep. 12, 1978, Ser. No. 941,712
Int. Cl.[2] B25B *23/14*; G01L *5/24*
U.S. Cl. 29—240 **8 Claims**



1. A method of making threaded joints from a pair of cooperatively threaded members comprising the following steps: (a) engaging the cooperating threads and rotating one of the members with respect to the other of the members; (b) monitoring the actual torque applied to said one member; (c) counting the actual turns made by said one member; and (d) indicating, prior to attaining a predetermined minimum torque value and a predetermined minimum turns value, when one of the values of said actual torque and said actual turns exceeds a predetermined percentage less than one hundred percent of said predetermined minimum torque value and a predetermined percentage less than one hundred percent of said predetermined minimum turns value respectively.

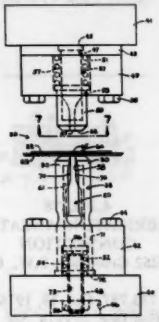
4,208,776

PUNCH, DIE AND ANVIL SET

Louis C. Schleicher, 1917 Marcastle Ct., Rochester, Mich. 48063

Continuation of Ser. No. 826,631, Sep. 15, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,309
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—243.5 **6 Claims**

1. Improvement in a punch, anvil and die set for spot clinching two or more materials together to form a spot clinch joint in which the anvil is arranged inside of the die and the punch and die move toward and away from each other and a lancing operation occurs on a workpart followed by a swaging operation in which the die spreads apart to accommodate the radial enlargement of the material of the workpart being swaged, said improvement comprising said die having a rigid base having an aperture therein, the anvil disposed in said aperture and slideable relative to the die, means for adjusting the axial position of the anvil relative to the die to accommodate different thicknesses of workparts, said die having resilient fingers which upstand from and are each integral with a portion of said base,



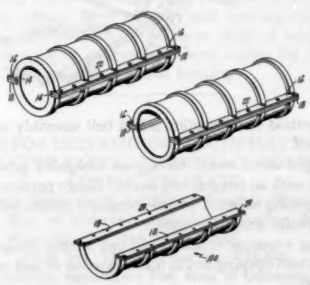
said die fingers, in themselves, providing both the strength to support the workpart to effect said lancing operation and the resiliency to separate from the front end of the anvil during the swaging operation, the die and anvil normally engaged at both their front and rear ends and spaced from each other between said ends, said spaces extending axially between said die fingers and said anvil and being accessible to foreign matter to prevent the latter from hindering return of the die fingers to their closed position following said swaging operation.

4,208,777

METHOD FOR MANUFACTURING A SPLIT ENGINE CASING FROM A CYLINDER

Thomas C. Walsh, New Britain; Peter E. Voyer, Tolland, and Francis J. Wallace, Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1978, Ser. No. 964,103
Int. Cl.[2] B23P *15/00*
U.S. Cl. 29—418 **3 Claims**



1. The method of fabricating a split case for a gas turbine engine including the steps of:

forming a cylinder blank;

cutting the outer diameter by turning to form circumferential, axially spaced rib-like elements;

cutting a pair of axially extending slots into the outer diameter of said cylinder with each slot being diametrically opposed to each other;

inserting two flat plate-like mating elements into said slots

and each pair of flat plate-like elements extending radially from the outer diameter of the cylinder;

welding each of said plate-like elements to the cylinder; and

cutting by turning the inner diameter of said cylinder to at least the inner edge of said flat plate-like elements so that the cylinder separates into two halves at the mating surface of each pair of said flat plate-like elements.

4,208,778

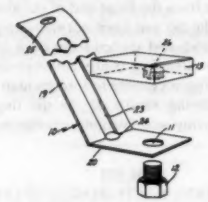
METHOD FOR FABRICATING A SEAT BELT ASSEMBLY CONNECTION

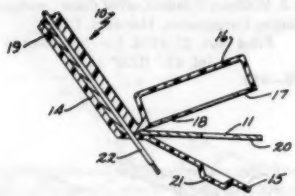
Gordon A. Ellens, 4262 Greenvale, S.W., Grand Rapids, Mich. 49509

Division of Ser. No. 733,757, Oct. 19, 1976, Pat. No. 4,141,573. This application Dec. 7, 1978, Ser. No. 967,479

Int. Cl.[2] B23P *17/00*

U.S. Cl. 29—423 **10 Claims**





1. A method of fabricating a seat belt assembly comprising the steps of:

forming a metal strap, having an elongated generally flat body with an integral end anchor flange portion including an opening adapted to pass coupling means for coupling said metal strap to a vehicle;

coupling a spacing block to said end anchor flange for covering said opening and at least a portion of said end anchor flange;

coating said metal strap and spacing block with a resilient material;

cutting said coating around a portion of the periphery of said end anchor flange thereby forming a moveable flap integrally coupled by a deformable hinge to the remainder of said coating;

flexing said flap to move said flap and expose said spacing block; and

removing said spacing block from contact with said metal strap anchor flange and coating.

4,208,779

AUTOMATIC TRANSFER MACHINE

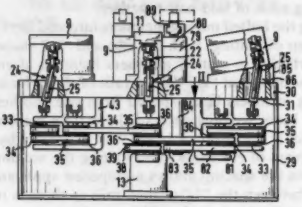
Eugen Bader, Rottwell, and Kurt Jauch, Bempflingen, both of Fed. Rep. of Germany, assignors to Antonie Bader, Rottwell, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,136

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706506

Int. Cl.[2] B23Q *39/04*

U.S. Cl. 29—563 **5 Claims**



1. An automatic transfer machine, comprising a plurality of machining units, each of said plurality of machining units including a housing adjustably arranged on a common table top and at least one tool carrier movably guided at said housings, a common drive means connected for movement of the tool carriers relative to the respective housings, and gear assemblies connecting the drive means through an opening for each of said machining units in the table top with one of each of said tool carriers, and an intermediate shaft each rotatably supported under the table top, a telescopically extensible universal joint shaft for each of said machining units, and a step-down gear each firmly connected with the respective housing, each of said step-down gears driving a control element provided with at least one cam face and acting on the corresponding tool carrier, characterized in that the common drive means **(13)** is connected with the intermediate shafts **(33)** by distributor gears **(14** to **21)**, in that the intermediate shafts **(33)** are arranged approximately at right angles relative to the plane of the table top **(30)**, in that the universal joint shafts **(25)** extend through the openings **(31)** in the table top **(30)** into the housings **(45)** of the machining units **(9)**, and in that the step-down gears **(44)** and the control elements **(49)** are disposed above the table top **(30)**.

4,208,780

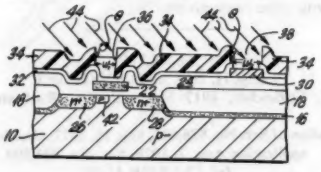
LAST-STAGE PROGRAMMING OF SEMICONDUCTOR INTEGRATED CIRCUITS INCLUDING SELECTIVE REMOVAL OF PASSIVATION LAYER

Paul Richman, St. James, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,739

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—571 **13 Claims**



1. A process for fabricating an MOS semiconductor circuit which comprises the steps of providing a substrate of a first conductivity type; forming spaced regions of an opposite conductivity type in a surface of said substrate, channel regions being defined between adjacent pairs of said regions which

define the source and drain regions of a plurality of field-effect transistors; forming a gate structure at said channel regions; forming a bonding pad on an insulating material overlying a portion of said substrate spaced from said field-effect transistors; said pad being electrically connected to at least one electrical element in said circuit forming a passivation layer over said field-effect transistors and over said bonding pad, thereby forming a completed semiconductor structure with said passivation layer constituting a protective layer therefor, the transistors at this stage in the process having a first electrical characteristic; forming a photoresist layer over said passivation layer; selectively forming at least one relatively narrow opening and at least one relatively wide opening in said photoresist layer at the location of the channel region of at least a selected one of said transistors and at the location of said bonding pad respectively; employing said remaining photoresist layer as an implantation barrier, implanting ions of a sufficient energy through said narrow opening in said photoresist layer and through the exposed portion of said passivation layer and the underlying gate structure of said selected one of said transistors and into the underlying channel region, thereby to form an implantation region therein, said ions being blocked by said bonding pad from penetrating to the area thereunder, said thus formed implantation region modifying the electrical characteristic at said selected one of said transistors to a second electrical characteristic different from said first electric characteristic; removing said passivation layer from over at least a part of said bonding pad by impinging ions at an angle to strike the layer only over the pad while leaving the portion of said passivation layer exposed by said narrow opening in said photoresist layer; and thereafter removing the remaining portion of said photoresist layer.

4,208,781

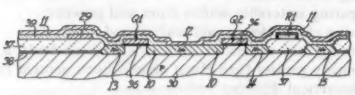
SEMICONDUCTOR INTEGRATED CIRCUIT WITH IMPLANTED RESISTOR ELEMENT IN POLYCRYSTALLINE SILICON LAYER

G. R. Mohan Rao; John S. Stanczak; Jih-Chang Lien, and Shyam Bhatia, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 727,116, Sep. 27, 1976, Pat. No. 4,110,776. This application Jun. 15, 1978, Ser. No. 916,037

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—577 C **15 Claims**



1. A method of making resistor elements in an insulated-gate field effect transistor integrated circuit comprising the steps of:

(a) forming thick field oxide in a pattern on the face of a semiconductor substrate, the field oxide surrounding a plurality of areas containing transistors,

(b) depositing relatively pure polycrystalline silicon over the field oxide and extending over at least some of the plurality of areas,

(c) implanting conductivity-determining impurity material into the polycrystalline silicon to provide resistor regions, of resistivity lower than that of the polycrystalline silicon when deposited,

(d) introducing conductivity-determining impurity material into other areas of the polycrystalline silicon exclusive of said resistor regions at an impurity concentration much higher than that of the resistor regions to provide connections to the transistors and to provide interconnections to other circuit elements of the integrated circuit,

(e) patterning said polycrystalline silicon to define said regions and said other areas.

4,208,782

METHODS OF FABRICATING TRANSDUCERS EMPLOYING FLAT BONDABLE SURFACES WITH BURIED CONTACT AREAS

Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Franklin Lakes, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 859,834, Dec. 12, 1977. This application Oct. 12, 1978, Ser. No. 950,589

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—580 **11 Claims**

1. A method of fabricating a semiconductor transducer structure comprising the steps of:

(a) forming a layer of silicon dioxide on a first surface of a wafer of semiconductor material of a given conductivity,

(b) masking said layer and diffusing into said wafer a contact pattern directed from a peripheral location on said wafer towards the center thereof,

(c) diffusing a sensor pattern of piezoresistive elements on said wafer relatively at said central region with said pattern in contact with said contact pattern,

(d) growing a layer of epitaxial semiconductor material on said surface to cover said sensor pattern and contact pattern,

(e) forming apertures in said epitaxial layer to contact said contact pattern, said apertures formed about an inner portion of said wafer surrounding said sensor pattern, with said apertures lying in a predetermined region about said sensor pattern,

(f) polishing said epitaxial layer about said inner portion towards said central area excluding said predetermined region to form a smooth continuous surface about said sensor pattern,

(g) bonding a glass housing to said polished smooth surface of said epitaxial layer whereby said aperture contact pattern is positioned about the outer edge of said housing with said sensor pattern positioned within the cross sectional area contained by said housing.

4,208,783

METHOD FOR DETERMINING THE OFFSET BETWEEN CONDUCTOR PATHS AND CONTACT HOLES IN A CONDUCTOR PLATE

Erich Luther, Ronnenberg, and Martin Maelzer, Wunstorf, both of Fed. Rep. of Germany, assignors to Luther & Maelzer GmbH, Wunstorf, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,486

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812976

Int. Cl.[2] H05K *3/10*

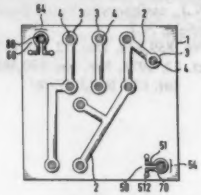
U.S. Cl. 29—593 **5 Claims**

1. A method for determining the offset between conductor paths and contact holes in a conductor plate, comprising:

(a) simultaneously applying the conductor paths, with contact eyes, and at least a control mark onto the conductor plate, said control mark having at least one control path which has a circularly curved portion and encloses, on at least one side, a control area,

(b) in a later step simultaneously punching contact holes and

a control hole for each control mark through the conductor plate, the predetermined position of the control hole being within the enclosed control area, characterized in that the distance between the edge of the control hole in



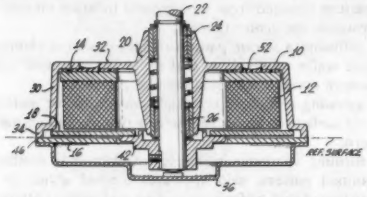
its predetermined position to the outer edge of the control path is selected to be equal to a given tolerance limit of the offset, and that the diameter of the control hole is larger than the width of the control path of the control mark.

4,208,784

METHOD FOR PLACING AND SECURING MAGNETS IN A MOTOR HOUSING

Roger S. Kincel, Whittier, Calif., assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,026
Int. Cl.[2] H02K *15/02*
U.S. Cl. 29—596 **9 Claims**



1. A method for placing magnets in a motor housing, said method comprising the steps of:
- forming a reference surface on the motor housing;
- inserting a magnet assembly into the housing until the magnet assembly is located at a preselected distance from the reference surface;
- securing the magnet assembly at the preselected distance from the reference surface; and
- securing an outer flux plate to the reference surface, to form a gap of a preselected size.

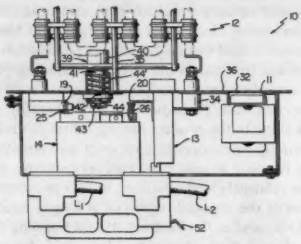
4,208,785

METHOD OF MAKING ELECTRICAL HEATER CONSTRUCTION

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 808,269, Jun. 20, 1977, Pat. No. 4,131,789. This application Oct. 11, 1978, Ser. No. 950,379
Int. Cl.[2] H05B *3/06*
U.S. Cl. 29—611 **5 Claims**

1. In a method of making an electrical heater construction having a frame means carrying electrical heater means and a movable drawer-like unit that is adapted to interconnect power source lead means to said heater means when said unit is in one position thereof relative to said frame means, the improvement comprising the step of securing a movable latch means to said frame means so as to be operatively associated with said unit to latch said unit in an out position thereof when said unit is moved out of said one position thereof to said out position to disconnect said power source lead means from said heater means whereby said unit cannot be moved in any direction from said out position thereof until said unit is unlatched from



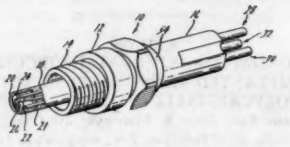
said latch means by said latch means being manually moved to an unlatching position thereof.

4,208,786

TITANIA THERMISTOR AND METHOD OF FABRICATING

Stanley R. Merchant, Garden City, and Michael J. Cermak, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 839,700, Oct. 5, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,614
Int. Cl.[2] H01C *7/00;* **G01N** *7/02*
U.S. Cl. 29—612 **4 Claims**



1. The method of manufacture of a thermistor operable at temperatures in excess of about 700° F. comprising the steps of forming a powder of high temperature stable phase ceramic forming metal oxide;
- preparing sinterable wafers from said powder;
- affixing electrodes to said wafers; and
- sintering said wafers to achieve a ceramic body having a density greater than about ninety-seven percent (97%) of theoretical density.

4,208,787

PROCESS FOR MAKING A SUBMERSIBLE FUSE

Russell M. Luck, Monroeville, and Gordon C. Gainer, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

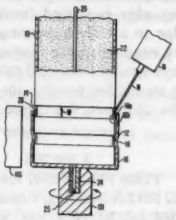
Division of Ser. No. 755,772, Dec. 30, 1976. This application Jan. 26, 1979, Ser. No. 6,830
Int. Cl.[2] H01H *69/02*
U.S. Cl. 29—623 **8 Claims**

1. A process for making an oil submersible fuse, comprising the steps of:
- (a) forming a first continuous annular groove around the outside of one end region of a hollow tubular electrically insulating barrel;
- (b) forming a second continuous annular groove around the outside of the other end region of said barrel;
- (c) disposing securely a first fuse ferrule on said one end region so that the edge of said first ferrule aligns with said first groove;
- (d) disposing securely a second fuse ferrule on said other end

region so that the edge of said second ferrule aligns with said second groove;

(e) heating said fuse to the curing temperature of a predetermined epoxy resin material until the gas generaton of the material of said fuse due to heating to said temperature has substantially ceased;

(f) applying said epoxy resin to said region of said first annular groove and to said region of said second annular



groove at said curing temperature to substantially fill a region between said first annular groove and said first ferrule and to substantially fill a region between said second annular groove and said second ferrule with uncured epoxy resin; and

(g) curing said epoxy resin at said curing temperature to form flexible seals in said first and said second annular grooves.

4,208,788

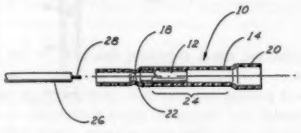
SPLICING ELECTRICAL WIRES

Dennis C. Siden, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 653,008, Jan. 28, 1976. This application Jan. 18, 1979, Ser. No. 4,401

Int. Cl.[2] H01R *43/04*

U.S. Cl. 29—862 **10 Claims**



1. A method for splicing electrical wires comprising the steps of:

(a) inserting a first electrical wire into a crimp barrel of a crimp splicer, the crimp splicer also including a deformable insulating sleeve having a bore, the crimp barrel consisting essentially of a ductile metal and being removably retained in the bore of the insulating sleeve;

(b) removing the crimp barrel from the insulating sleeve without damaging the insulating sleeve while maintaining both the crimp barrel and the insulating sleeve on the first wire;

(c) inserting a second electrical wire into the crimp barrel;

(d) crimping the removed crimp barrel for retaining the first and second wires therein; and

(e) placing the crimped crimp barrel into the insulating sleeve without damaging the insulating sleeve.

4,208,789

CONTAINER MANUFACTURING APPARATUS

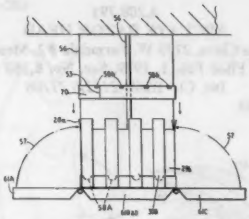
Robert Lloyd, Galston, and Maxwell J. Turner, Sylvania, both of Australia, assignors to Energy Recycling Corporation Pty. Ltd., Sylvania, Australia

Division of Ser. No. 800,147, May 24, 1977, Pat. No. 4,170,312. This application Feb. 8, 1979, Ser. No. 10,432

Claims priority, application Australia, May 27, 1976, PC6072

Int. Cl.[2] B27J *1/00*

U.S. Cl. 29—650 **2 Claims**



1. Apparatus for forming a woven closed container comprising a case having two end walls and four side walls extending therebetween; said apparatus comprising a tabletop having dimensions approximately the same as those of the end of said container; means to arrange and grip one end of a plurality of strips in parallel relationship on said table, and to longitudinally displace alternate strips by about one strip width, means to grip the opposite end of said strips to reciprocably displace alternate strips from the normal plane of said strips; means to receive and direct a first transverse strip between said strips displaced from their normal plane and the alternate strips still in said plane; means to move said transverse strip to align with the edge of said table; means to insert a second transverse strip between said displaced strips following reciprocation thereof, and to force said second transverse strip against said first transverse strip; means to bend the unwoven ends of said strips, extending beyond said tabletop, normal to said tabletop; means to alternately reciprocably displace said unwoven ends to accommodate a ring member between said alternately displaced ends and means to force successive ring members along said strips until each abuts against the previous ring; and an open ended section joining device comprising means to bring two open-ended sections together so that said sections are joined at their open ends.

4,208,790

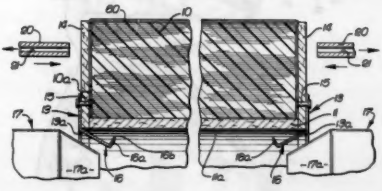
ROLL END PROTECTION

Robert B. Eglinton, Huntington Beach, Calif., assignor to Chromalloy American Corporation, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,478

Int. Cl.[2] B65D *85/67*; B23P *11/00*; B25B *11/00*

U.S. Cl. 29—798 **17 Claims**



1. In a device to protect the end of a roll of material wrapped about a tubular core having a bore,

(a) an annular body sized to be located in protective position proximate said roll end, and

(b) at least one prong having attachment to the body to be

inserted relatively endwise into the core interior when the annular body is located in said position,

(c) said prong having a tip at the end portion of the prong furthest from the body and angled to extend at the outer side of the prong to penetrate the core when the prong is deflected toward the core bore whereby the device then becomes attached to the core with the annular body in said position, the prong being free of any projection at its inner side opposite said outer side.

4,208,791

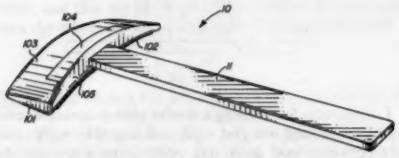
ARCUATE RAZOR HEAD

Barbara J. Van Cleve, 2155 W. Farmdale #2, Mesa, Ariz. 85202

Filed Feb. 1, 1979, Ser. No. 8,282

Int. Cl.[2] B26B *21/22, 21/06*

U.S. Cl. 30—49 **1 Claim**



1. A razor for the removal of body hair from arms, legs, underarms and the like comprising:

a razor head having upper and lower arcuate surfaces, the extensions of which surfaces intersect in a line, said upper surface conforming comfortably to concave surfaces of the body and said lower surface conforming comfortably to convex body surfaces; and

at least one razor cutting edge emplaced in each of said upper and lower arcuate surfaces, conforming to the arcuate shape thereof and removed from the line at which the extension of said surfaces intersect, such that, when either one of said surfaces is drawn across a conforming body surface, bodily hair growth there existing is removed by said cutting edge.

4,208,792

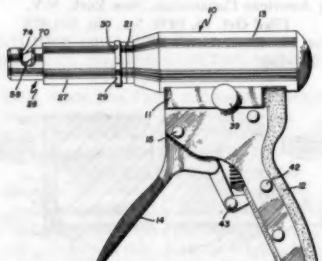
SHEARING TOOL

John F. Ewig, Jr., Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Oct. 10, 1978, Ser. No. 949,753

Int. Cl.[2] B26B *15/00*

U.S. Cl. 30—228 **6 Claims**



1. A shearing tool, comprising:

(a) a housing

(b) a first shear member having a tubular portion fixed to the housing and an extending portion provided with a first cutting edge spaced from the tubular portion and located within a shear plane,

(c) a second shear member slidably mounted within the tubular portion of the first shear member and having an extending portion provided with a flat surface within said shear plane and a slot extending generally transverse to said shear plane and intersecting said flat surface to form a second cutting edge within said shear plane, said second shear member being movable along a straight axis within said shear plane from an open position at which the second cutting edge is spaced from and opposes the first cutting edge to a closed shearing position at which the first cutting edge meets the second cutting edge, said slot being always spaced from said tubular portion, and

(d) actuating means for moving the second shear member between the said open and closed position.

4,208,793

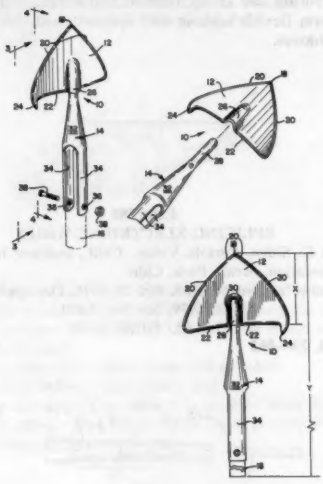
FIRE FIGHTING DEVICE

Richard Sinnott, 5041 S. Keating, Chicago, Ill. 60632

Filed Jul. 10, 1978, Ser. No. 923,375

Int. Cl.[2] B26B *3/00*

U.S. Cl. 30—299 **1 Claim**



1. A fire fighting device for attachment to a hand-held pole for battering and cutting holes in walls and other parts of buildings, the improvement comprising:

blade means for battering and cutting;

adapter means for connecting the blade means to the pole;

said blade means having a tip spaced from said adapter means;

a pair of blade edge means extending in opposite directions from said tip;

said blade means having a bottom edge extending across the blade means generally at right angles to the adapter means;

fulcrum means spaced away from the tip at a first distance and having pointed means protruding below the bottom edge for gripping a portion of a building in order that the fire fighting device may function as a lever member to multiply applied forces;

said blade means including contoured attaching means integrally formed therein and weld means cooperative with the adapter means for receiving the adapter means for attachment of a pole;

said contoured attaching means of the blade means comprising formed means permanently indented therein;

said formed means providing a recess extending from the bottom edge and terminating at an end located between said bottom edge and said tip;

said adapter means having a cylindrical end adapted for attachment to the formed means permanently indented in said blade means;

said formed means having a shape to receive the cylindrical end of the adapter means;

filler metal forming a metallurgical connection between the formed means and said cylindrical end of the adapter means to securely attach the adapter means to the blade means;

said adapter means including spaced leg members having an arcuate contour and adapted to grip the pole; and

truncated cone means having a bottom portion attached to the spaced leg members and having a top portion attached to the cylindrical end adapted to be metallurgically attached to the formed means of the blade means.

4,208,794

SET OF ARTIFICIAL MOLAR TEETH

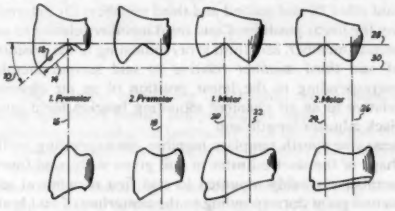
Albert Gerber, Zürich, Switzerland, assignor to Dentalgerate "Condylator" Peter T. Gerber, Zürich, Switzerland

Filed Sep. 6, 1977, Ser. No. 830,999

Claims priority, application Switzerland, Oct. 12, 1976, 12878/76

Int. Cl.[2] A61C *13/00*

U.S. Cl. 433—197 **1 Claim**



1. In a set of artificial posterior teeth including first and second upper premolars, first and second lower premolars, first and second upper molars, and first and second lower molars, arranged in respective pairs of upper and lower generally superimposed teeth wherein one tooth of each pair of upper and lower teeth has an inclined contact surface defining a mastication groove, and the other tooth of each pair of upper and lower teeth has a proturberance coacting with the contact surface of the one tooth, the improvement comprising

said inclined contact surfaces of the respective one teeth having successive lesser angles of inclination proceeding from the one first premolar tooth to the one second molar tooth,

said inclined contact surfaces of the respective one teeth having successive lesser lengths proceeding from the one first premolar tooth to the one second molar tooth, and

said contact surfaces and said protuberances on the upper and lower teeth having respective relative heights and positions such that there is successive contact between the coacting protuberances and contact surfaces of the first premolars, the second premolars, the first molars and the second molars in the named order.

4,208,795

METHOD OF PROVIDING A LIVING PERSON'S BODY WITH INFORMATION FOR FORENSIC IDENTIFICATION

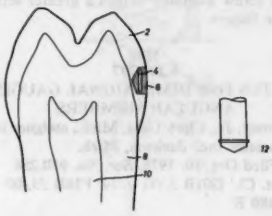
Hans R. Mühlemann, Beustweg 8, Zürich; Ernesto Steiner, Bachtelweg 26, Egg, and Marco Brandestini, Streulistrasse 39, Zürich, all of Switzerland

Filed Mar. 14, 1978, Ser. No. 886,439

Claims priority, application Switzerland, Mar. 22, 1977, 3588/77

Int. Cl.[2] A61C *5/08*

U.S. Cl. 433—203 **9 Claims**



1. A method for providing the body of a living person with visually identifiable and locatable permanent identifying information, comprising the steps of:

providing a shallow cavity in the surface of a dental crown in the person's mouth,

installing in the shallow cavity an information carrier of durable material, the carrier being provided with information as to the identity of the person, and

filling the shallow cavity with a filling material which, on at least the surface of the filling material has a coloring which is visually identifiable with respect to the color of the dental crown surface, said filling material embedding the plate and hardening to a durable, heat resistant filling.

4,208,796

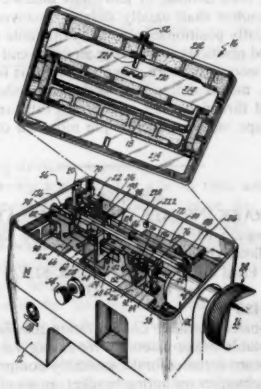
GAGE FOR DIRECT INTERNAL MEASUREMENT

Orean E. Michaud, Bristol, and George F. Kindl, Newington, both of Conn., assignors to Colt Industries Operating Corp. (Pratt & Whitney Machine Tool Division), West Hartford, Conn.

Filed Feb. 23, 1979, Ser. No. 14,310

Int. Cl.[2] G01B *7/02*

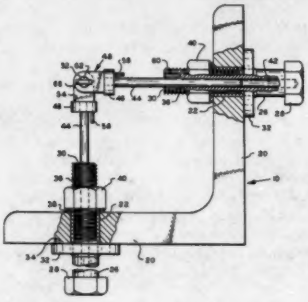
U.S. Cl. 33—143 L **4 Claims**



1. In an internal gage having a frame, the combination comprising:

a platform;
a plurality of reeds securing the platform to the frame;
a carriage mounted upon the frame in spaced relationship to the platform for axial sliding movement thereupon;
a precision screw assembly mounted upon the frame in engagement with the carriage for moving the carriage;
a position transducer for sensing the position of the platform relative to the frame;
an incremental position transducer operatively connected to the precision screw assembly;
a first gaging finger mounted upon the platform; and
a second gaging finger mounted upon the carriage such that movement of the carriage in a direction away from the precision screw assembly causes a greater separation between the fingers.

4,208,797
APPARATUS FOR DIMENSIONAL GAUGING OF ANGULAR MEMBERS
Charles J. Stewart, Jr., Clark Lake, Mich., assignor to Commonwealth Associates Inc., Jackson, Mich.
Filed Oct. 10, 1978, Ser. No. 950,256
Int. Cl.[2] G01B *5/00, 5/14;* **F16B** *33/00*
U.S. Cl. 33—180 R **10 Claims**



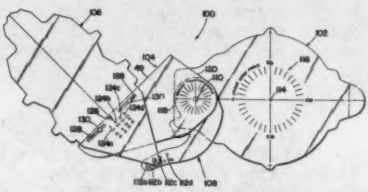
7. A dimensional gauge for angular members having a pair of angularly related flange portions having corresponding holes defined therein comprising, in combination, a threaded shaft having a longitudinal axis, an end and a shoulder transversely disposed to said axis and axially spaced from said end, a nut threaded upon said shaft whereby the shaft may be inserted into a flange portion hole and mounted by said nut and shoulder, an axial bore defined in said shaft intersecting said end thereof, an anchor shaft axially slidably received within said shaft bore axially positionable between operable extended and fully retracted positions and having an outer end located exteriorly of the associated bore when said shaft is fully retracted into its bore, means defined on said anchor shaft outer end engaging said threaded shaft end in said fully retracted position, and a tape measure anchor pin mounted on said shaft's outer end.

4,208,798
BRAKE INSTALLATION TEMPLATE
Ernest C. Sampson, Milford, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jul. 30, 1979, Ser. No. 61,579
Int. Cl.[2] G01B *3/30*
U.S. Cl. 33—180 AT **18 Claims**

1. A multi-piece, variable configuration template for determining acceptable brake assembly mounting variables for an air operated, cam actuated brake assembly comprising a brake spider, an air chamber mounting bracket, an air chamber and a slack adjuster to be mounted on a vehicle of known configuration having an axle shaft, said template comprising:

a first template member corresponding to the shape of the brake spider in a given scale, said first member having a first point marked thereon corresponding to the point at which the brake spider must align with the axle shaft of the vehicle to which the brake assembly is to be mounted, a first array of indicia marks on said first member centered on said first point for use with a reference line to determine acceptable angular relationships between the brake spider and the vehicle, said first member having a second point marked thereon corresponding to the centerline of the brake actuating cam;

a second template member corresponding to the shape of the brake air chamber mounting bracket in said given scale, said second member pivotably mounted to said first member about said second point corresponding to the centerline of the brake actuating cam, one of said first and second members having a pointer mark thereon for cooperation with a second array centered about said second point on the other of said first and second members for determination of the angular relationship between said first and said second members;



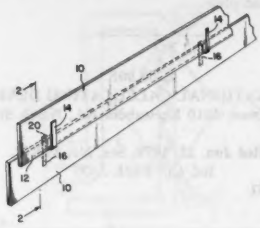
a third template member corresponding to the shape of the air chamber in said given scale in the fully extended position thereof, said third member slidably mounted on said second member, a second pointer on one of said second and third members for cooperation with a third array on said other of said second and third members for determining the linear position of said third member relative to said second member, said third array indicating linear positions of said third member relative to said second member corresponding to the linear position of an air chamber relative to an air chamber mounting bracket for a given slack adjuster length; and

at least one fourth template member corresponding to the shape of the slack adjuster in said given scale, said fourth member pivotably mounted to said first member at said second point corresponding to the centerline of said brake operating cam, said fourth member removably connectable to said third member at various finite points on said fourth member corresponding to various slack adjuster lengths.

4,208,799
INCH GAUGE
Donald Frantello, 405 SE. 7th Ave., Deerfield Beach, Fla. 33441
Filed Sep. 27, 1976, Ser. No. 726,536
Int. Cl.[2] G01B *3/30*
U.S. Cl. 33—187 **6 Claims**

1. A device for use in conjunction with the mounting of wall building siding, comprising a unitary apparatus including a pair of parallel spaced apart vertically aligned elongated first members, a pair of horizontally aligned parallel elongated second members, said second members disposed perpendicular to said first members and fixedly secured thereto, each of said second members disposed in spaced apart relationship and disposed out of planar alignment with each other, a third elongated member fixedly secured to and in between said second members and being vertically disposed relative thereto, wherein one of said first members and one of said second members and one surface of said third member define a first cavity, another of said first members and the other surface of said third mem-

ber and the other of said second members defining a second cavity, said first and said second cavities being out of planar



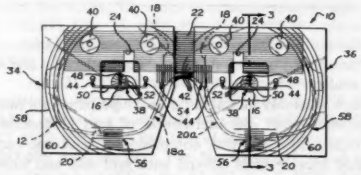
alignment with one another and being partially juxtaposed relative to one another.

4,208,800

METHOD FOR MAKING OPHTHALMIC MEASUREMENTS

Bernard Grolman, Worcester, and William Richards, Medway, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 679,083, Oct. 2, 1975, Pat. No. 4,055,900.
This application Jun. 21, 1976, Ser. No. 697,906
Int. Cl.[2] A61B *3/10*
U.S. Cl. 33—200 **2 Claims**



1. The method of making ophthalmic measurements for glazing spectacles frames comprising the steps of:

adjusting a preselected spectacles fra,e having a pair of lens rims for proper fitting thereof to a patient's face before his two eyes;

detachably connecting a measuring means carrying an aligning reticle to said frame with said reticle disposed within an area circumscribed by one lens rim of the frame;

placing said frame in proper wearing position upon said patient's face with said measuring means thereconnected and said one lens rim located forwardly of one of said patient's two eyes;

aligning in a single operation a single preselected point on said reticle with a preselected point on said one of said patient's eyes; and

in a single step measuring from said single preselected point on said aligned reticle the distances directly therefrom to both an extreme lateral and the extreme inferior points on said lens rim of said frames, said measurements being applicable to the finishing of an opthalmic lens for glazing in said rim.

4,208,801

MORTAR SIGHTING DEVICE

Oather Blair, 8415 Lou Ct., Louisville, Ky. 40201

Filed Aug. 10, 1978, Ser. No. 932,645
Int. Cl.[2] F41G *3/02*
U.S. Cl. 33—235 **4 Claims**

1. Apparatus for aiming a missile firing weapon including a mount means adapted to carry a reference plate rotatable on the mount means in a generally horizontal plane; pivot means carried by the reference plate; aiming plate means pivotably received on the reference plate means for rotation about the pivot means in a horizontal plane; releasable lock means to secure the aiming plate to the reference plate for rotation therewith and releasable to permit rotation of the aiming plate independent of the referenced plate; sight means carried by and for rotation with, said aiming plate to define a line of sight to align a missile firing weapon wherein said sight means includes

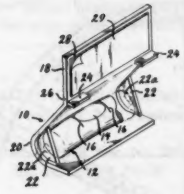
elongate hollow tubular means having light source means to admit light to one end of said tubular means and vertically oriented aperature slit means at the opposite end of said tubular means where the end of said tubular means carrying said slit means is directed toward said missile firing weapon and where the light beam passing through said vertical slit defines a line of sight directed toward said missile firing weapon to aim same toward a selected target.

4,208,802

LEVEL INDICATING DEVICE FOR WALL-MOUNTED PICTURES

Stephen R. Berndt, 16204 - 143rd Pl. SE., Renton, Wash. 98055

Filed Jan. 29, 1979, Ser. No. 7,377
Int. Cl.[2] G01C *9/28*
U.S. Cl. 33—347 **11 Claims**



1. A leveling device comprising:

a holder having a pocket for a level tube and having an upright mounting plate spaced above the pocket and spaced forwardly of the rear of the pocket,

guide means at the front of the holder adjacent the bottom of the mounting plate for properly positioning the holder on an object to be leveled, and

securing means for holding said mounting plate on said object after the holder has been positioned thereon,

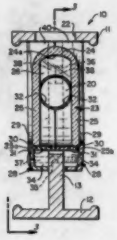
said holder having a reduced cross-sectional area above said guide means whereby the pocket may be readily severed from the mounting plate by the force applied by pressing the object rearward toward the mounting plate while the back of the holder at the rear of the pocket bears against a wall.

4,208,803

TOP VIEWABLE VIAL LEVEL

Martin M. Brown, Kensington, and Sylvester W. Bies, Bloomfield, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Jul. 23, 1979, Ser. No. 60,015
Int. Cl.[2] G01C *9/32*
U.S. Cl. 33—348 **6 Claims**



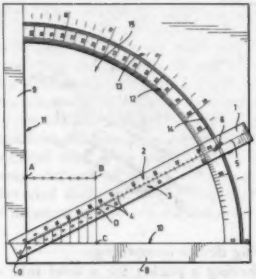
6. In combination with a level having an I-beam type frame provided with parallel flanges and an interconnecting web having a through opening communicating with a notch in an adjacent flange, a liquid vial and mounting assembly therefor, said mounting assembly comprising a transparent shroud in the form of a saddle of U-shaped cross-section having a bight portion extending around the vial below the notch and depending side walls forming side windows protecting the vial, and a pair of mounting caps secured to either side of the web around the periphery of the through opening and securing the shroud and said vial to said web for viewing from above said flange and from either side of said web.

4,208,804

RULER MEANS FOR DIVIDING A DISTANCE

Birgitta M. Lundin, Sampovägen 2, 10900 Hangö90, Finland

Filed Oct. 3, 1978, Ser. No. 948,206
Claims priority, application Finland, Oct. 5, 1977, 772940
Int. Cl.[2] B43L *7/06*
U.S. Cl. 33—418 **5 Claims**



1. A ruler means for dividing a distance into an optional number of parts, e.g., into equal parts, comprising:

a ruler having at least one numbered first scale and a zero point, wherein said ruler, along said first scale or scales, is provided with plotting means, such as holes, for plotting an optional division of an auxiliary distance the projection whereof comprises the distance to be divided, said holes being equidistantly spaced and being tapered toward the rear face of said ruler, and the number of said first scales being 1 to 6;

a partially open plate having at least one numbered second scale extending over an arc of a circle, e.g., a quarter of a circle, and a center point, said second scale being graduated to indicate the length of the parts in the divided line, and

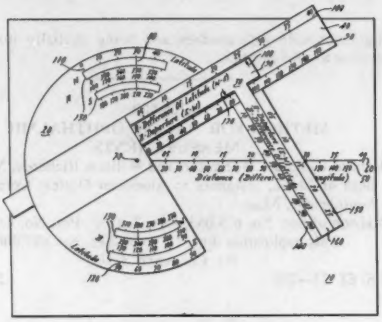
means for journalling the ruler at its zero point in said center point of said plate.

4,208,805

NAVIGATIONAL CALCULATING DEVICE

David M. McEwen, 4010 Keewahdin Rd., North Street, Mich. 48049

Filed Jun. 25, 1979, Ser. No. 51,678
Int. Cl.[2] B43L *5/00*
U.S. Cl. 33—431 **13 Claims**



1. A navigational calculating device comprised of:

(a) a base plate containing intersecting horizontal and vertical scales,

(b) a disk rotatably mounted on said base plate at a position coincident with the intersection of said horizontal and vertical scales, said disk comprising at least one radially spaced arcuate scale coaxial with said disk and superimposed over the vertical scale on the base plate, said arcuate scale being of constant radius and having an origin radially aligned with the intersection of said scales on said base plate, said disk having an arm affixed thereto, the lower edge of which is aligned with said intersection of the scales on the base plate, said arm containing at least one longitudinal scale, and

(c) a square slidably mounted on said arm, said square comprising both a vertical portion having an upper edge adjacent the lower edge of said arm and containing at least one scale having its origin aligned with the intersection of the scales on the base plate, and a horizontal portion integral with said vertical portion adapted for sliding movement relative to said arm, said horizontal portion containing at least one pointer spaced apart from and aligned with an edge of said vertical portion.

4,208,806

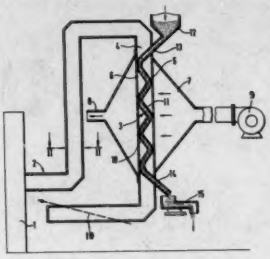
PROCESS FOR TREATMENT OF POURABLE MATERIALS WITH MICROWAVES

Josef A. Manser, Uzwil, and Georg Dankesreiter, Oberburen, both of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Continuation-in-part of Ser. No. 710,343, Jul. 30, 1978, Pat. No. 4,126,945. This application Oct. 27, 1978, Ser. No. 955,456
Int. Cl.[2] F26B *3/34*
U.S. Cl. 34—1 **21 Claims**

1. A process for the treatment, with microwave energy, of particulate material moving through the energy in a direction having a principal vertical component with which the direction of propagation of the energy is aligned, said process com-

prising the step of regulating the rate of movement of the material so as to promote the formation and interruption of



chains of contacting particles of said material having substantially the direction of the electric field of said energy.

4,208,807

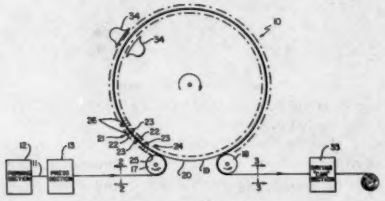
ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned. This application Jun. 21, 1979, Ser. No. 50,807

Int. Cl.[2] F26B *3/34, 3/36*

U.S. Cl. 34—1 **9 Claims**



1. In an apparatus for drying material by disposing said material against a heated surface means, the improvement comprising electrode means disposed adjacent said surface means and cooperating therewith to define a plurality of alternately arranged non-uniform electrostatic fields extending between said electrode means and said surface means with each non-uniform field having the higher intensity portion thereof substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field so that said fields can at least partially extend through said material when said material is disposed against said surface means and between said surface means and said electrode means.

4,208,808

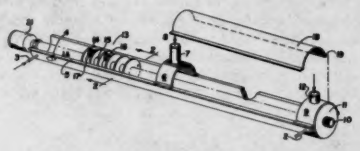
BLOOD DRYING METHOD AND APPARATUS

L. A. Boone, 418 Bloomfield Rd., Bardstown, Ky. 40004

Filed Mar. 13, 1978, Ser. No. 885,657

Int. Cl.[2] F26B *17/12*

U.S. Cl. 34—166 **7 Claims**



1. A drying device for coagulating and drying blood including:

(a) a generally upwardly sloped housing of generally semicircular cross-section of selected diameter having a first lower end and a second upper end and having an elongate opening along a portion of the top side thereof and defining a drying chamber;

(b) heat source means to selectively heat a portion of the innermost wall of said housing;

(c) elongate screw conveyor means disposed within said housing for rotation within said housing around an axis parallel to the longitudinal axis of said housing to convey blood and solid material toward said second end of said housing where the screw conveyor provides a shaft with helical blade means secured thereto and extending radially outwardly therefrom and where the diameter of the blade means is approximately equal to the diameter of the housing;

(d) vapor emission means communicating with said drying chamber and located intermediate said first and second ends of said housing;

(e) blood supply means to supply blood to be treated to the lower portion of said housing to provide a pool of blood to be agitated by said conveyor where rotation of said conveyor carries liquid blood and solids upwardly along the axis of said housing;

(f) dried solids emission means adjacent the second end of said housing for emission of dried solids conveyed upwardly in said housing by said conveyor means;

(g) finger means extending radially outwardly from said conveyor shaft, along a portion thereof, to contact a portion of the inner surface of said housing to remove solid material from the inner surface of said housing.

4,208,809

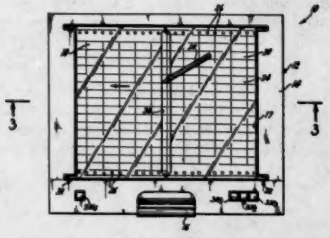
AUDIO-TIME PLOTTING EQUIPMENT AND METHOD

Robert C. Schwartz, Woodmere, N.Y., assignor to Talijon, Inc., Woodmere, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,510

Int. Cl.[2] G09B *29/06*

U.S. Cl. 35—1 **10 Claims**



1. A visual choreographer for use in visually representing

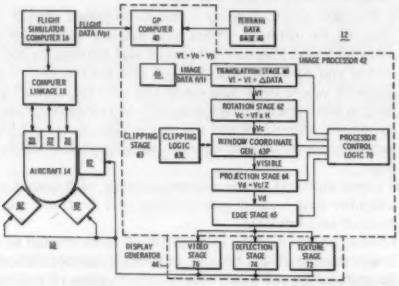
events as a function of time comprising a housing including a panel having a viewing area; a pair of parallel rollers rotatably mounted in said frame in spaced relation to each other; drive means associated with at least one of said rollers; drive means control circuitry in said housing; charting means receivable about said rollers and rotating therewith in a continuous loop having a portion of said charting means visible through said viewing area throughout the rotation of said charting means, a referencing line on said panel adjacent said viewing area parallel to an axis of one of said rollers: means for selectively generating a signal pulse; means for receiving a signal pulse; an output and input means on said housing operatively connected to said signal generating and said signal-receiving means.

4,208,810

CLIPPING POLYGON FACES THROUGH A POLYHEDRON OF VISION

Michel A. Rohner, San Jose, and Judit K. Florence, Menlo Park, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Sep. 11, 1978, Ser. No. 940,818
Int. Cl.[2] G09B *9/08*; H04N *7/18*
U.S. Cl. 35—10.24 **18 Claims**



1. An image processor system responsive to the simulated movement between an observer and the vertices of polygon faces within a data base, which system eliminates polygon vertices outside the polyhedral angle of vision defined by the observers field of view through a polygon shaped viewing port, for providing display signals to a display device, the image processor system comprising:

first circuit means for continuously providing the positional relationship between the observers field of view and the polygon vertices, in sequence defining a current polygon face and a current vertex and a previous vertex within the current polygon face

clipping means responsive to the positional relationship for eliminating polygon vertices outside the polyhedral angle of vision as each face becomes the current face by sequentially testing the position of each current vertex simultaneously against the positions of all of the boundary plane surfaces forming the polyhedral angle of vision; and

second circuit means responsive to the polygon vertices within the polyhedral angle of vision for providing display signals to the display device.

4,208,811

DISPLAY WITH OVERLAPPING PICTURE ELEMENTS

Enrique Junowicz, 416 Clinton Rd., Brookline, Mass. 02146

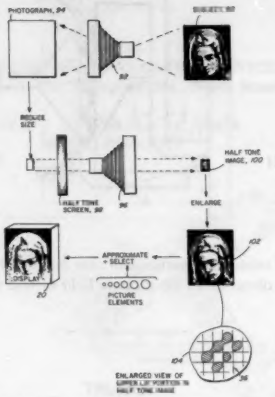
Filed Nov. 30, 1978, Ser. No. 965,293
Int. Cl.[2] G09B *19/00*
U.S. Cl. 35—27 **36 Claims**

1. A display comprising:

a set of picture elements;

a substrate having locations thereon for mounting said picture elements, said locations being uniformly spaced on said substrate at the points of a grid, said grid being an enlargement of the grid of a photographic half tone screen, a plurality of said elements having a size greater than the spacing between the points of said grid;

means for mounting said elements to said substrate at said



locations, individual ones of said plurality of elements overlapping each other; and wherein

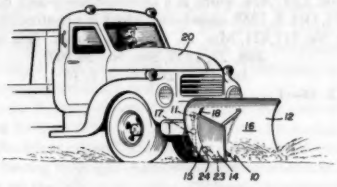
each of said elements provides a tone approximating the tone of a grid cell of a half tone photograph produced by said screen.

4,208,812

SNOW PLOW ATTACHMENT

Richard C. Brownly, Troy, N.H., assignor to Norman S. Blodgett, Worcester, Mass.

Filed Jun. 12, 1978, Ser. No. 914,846
Int. Cl.[2] E01H *5/00*
U.S. Cl. 37—41 **7 Claims**



1. Snow plow attachment, comprising:

(a) a hinge element adapted to be attached to the rear surface of a snow plow blade,

(b) a plate-like baffle attached to the hinge element, the baffle having one edge adapted to conform to the shape of the forwardly-directed surface of the snow plow blade, and

(c) an actuator connected to the baffle to rotate it about the hinge element in a vertical plane from a first lowered position in which the said one edge of the baffle lies against the said forwardly-directed surface of the blade to prevent movement of snow there across to a second raised position in which the said one edge is substantially removed from the surface of the blade, the snow plow blade being is provided with a vertical slot, and the baffle being provided with a rearwardly-directed tab that extends through the slot to the rear of the blade for attachment to the hinge element, the tab being connected to the hinge element by a hinge pin, and the tab extending rearwardly of the hinge pin to a point that is spaced a substantial

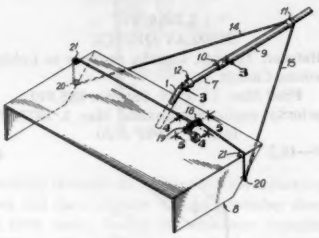
distance therefrom and is connected to one end of the actuator by a pin at that point.

4,208,813

STEERABLE OCEAN FLOOR DREDGE VEHICLE

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed May 26, 1978, Ser. No. 910,080
Int. Cl.[2] E02F *7/00, 3/88*
U.S. Cl. 37—58 **5 Claims**



1. A dredging system designed and adapted to be towed along the ocean floor via a surface vessel connected thereto by a tow line, the dredge system comprising:

(a) a dredge vehicle;

(b) lower tow connector means secured to the dredge vehicle;

(c) means for pivotally and telescopically securing the lower tow connector to the tow line;

(d) first and second linear steering linkages extending from the tow line to opposing sides of the dredge vehicle; and

(e) means for alternately activating the first and second linear steering linkages in opposite directions,

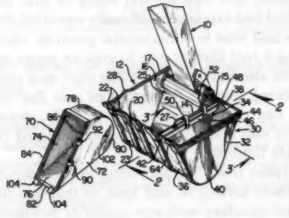
whereby the dredge vehicle can be pivoted relative to the tow line by pulling on the first steering linkage, and can be pivoted in an opposite direction relative to the tow line by pulling on the second steering linkage.

4,208,814

BACKHOE BUCKET EXTENSION DEVICE

Richard Stone, P.O. Box 104, Bennett, Colo. 80102

Filed Aug. 11, 1978, Ser. No. 932,783
Int. Cl.[2] E02F *3/76*
U.S. Cl. 37—117.5 **5 Claims**



1. In an excavation bucket for a backhoe, which has an open-topped container with a front, back and bottom all formed together in a continuous, contoured, U-shaped configuration, and left and right sidewalls, thickened, reinforced cutting edges around the top perimeter of the container, and tines protruding upwardly and outwardly from the front wall of the container, the improvement comprising:

a first removable extension device **30** having a front panel **36**, rear panel **38**, and bottom panel **30**, all formed together in a continuous, contoured, U-shaped cross-sectional configuration in substantially the same size and shape as the cross-sectional of said bucket, a right side panel **32** and a left side panel **34** which enclose the sides of said device, said left side panel having its top portion recessed downwardly and adapted to be positioned in abutting contact with said right sidewall of said bucket under its thickened cutting edge, a pair of hooks **50, 52** extending upwardly in spaced-apart relation to each other from the left panel **34** and adapted to hook over the top edge of the right side of said bucket for suspending said extension device **30** therefrom, a fastener **54** adapted for fastening the lower portions of said bucket and said extension device together in immovable relation to each other, a cutting edge **42** on the top of the front panel **36**, and a tine **64** extending upwardly and outwardly from said front panel **36**, and

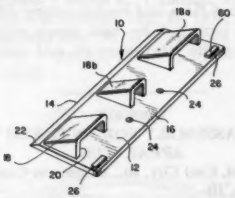
a second removable extension device **70** having a front panel **76**, rear panel **78**, and bottom panel **80**, all formed together in a continuous, contoured, U-shaped cross-sectional configuration in substantially the same size and shape as the cross-section of said bucket, a right side panel **72** and a left side panel **34** which enclose the sides of said device, said right side panel having its top portion recessed downwardly and adapted to be positioned in abutting contact with said left sidewall of said bucket under its thickened cutting edge, a pair of hooks **90, 92** extending upwardly in spaced-apart relation to each other from the right panel **72** and adapted to hook over the top edge of the left side of said bucket for suspending said extension device **70** therefrom, a fastener adapted for fastening the lower portions of said bucket and said extension device together in immovable relation to each other, a cutting edge **82** on the top of the front panel **76**, and a tine **104** extending upwardly and outwardly from said front panel **76**.

4,208,815

STRAIGHT EDGE BLADE FOR INSTALLATION ON AN EARTH MOVING BUCKET

Julius R. Yunker, and Jerrold R. Yunker, both of 100 West Rd., Pittsburgh, Pa. 15209, assignors to Julius Ralph Yunker; Jerrold Ralph Yunker and Charles E. Michael, all of Pittsburgh, Pa.

Filed Jun. 9, 1978, Ser. No. 914,154
Int. Cl.[2] E02F *9/28*
U.S. Cl. 37—141 R **3 Claims**



1. An easily attachable and removable digging straight edge for installation on an earth mover bucket of a type having a plurality of bifurcated forward pointed teeth straddling the lower lip thereof and said teeth including an upper and lower plate comprising, a plate, said plate no longer than the width of said bucket, at least one pocket means on one face of said plate for fitting on a plurality of said teeth, said plate extending forward and rearward of said lower plate of said teeth, stress pad means on said plate behind the lower plate of said teeth for bearing against the outer surface of said bucket, said stress pad means at least at the longitudinal ends of said plate, means for holding said plate against said lower plate of said teeth, and said holding means comprising at least one opening in said plate; at least one opening in said bucket between a pair of said teeth; a countersink in the outside of said plate surrounding said opening; and nut and bolt means through said openings holding said plate and said bucket tightly engaged; said nut and

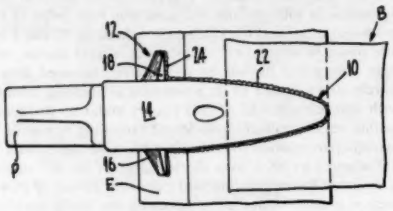
bolt means engaged at one end in said counter-sink and at another end in said bucket; no portion of said bolt means extending beyond said nut means when said nut and bolt means are engaged and said other portion protected by said counter-sink.

4,208,816

TOOTH ADAPTOR

Donald J. West, Thornleigh, Australia, assignor to J. I. Case Company, Racine, Wis.

PCT No. PCT/US79/00090, § 371 Date Feb. 15, 1979, § 102(e) Date Feb. 15, 1979
This PCT application filed Jul. 25, 1978, Ser. No. 927,761
Filed Jul. 25, 1978, Ser. No. 927,761
Claims priority, application Australia, Jul. 25, 1977, PD0959
Int. Cl.[2] E02F 9/28
U.S. Cl. 37—141 R **3 Claims**



1. An earth working bucket having a beveled cutting edge, a tooth adaptor secured to said bucket at said bucket cutting edge,

said adaptor having an elongated body overlying said bucket cutting edge for receiving a replaceable point having a leading end extending beyond said bucket cutting edge,

said adaptor body having a pair of oppositely extending wings spaced from said adaptor leading end,

said wings each having a smoothly rounded leading face spaced inwardly from said bucket cutting edge,

said wings tapering in cross section from said body to a smaller cross section at their ends,

said adaptor secured to said bucket by a weld extending around the periphery of said body and behind said wings,

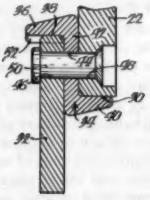
said weld spaced from said bucket cutting edge, the weld thus being protected by said wings and said wings strengthening the attachment of said adaptor to said bucket.

4,208,817

ROUTER BIT ASSEMBLY FOR AN EARTH WORKING APPARATUS

Russell D. Merkel, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 15, 1979, Ser. No. 30,244
Int. Cl.[2] E02F 9/28
U.S. Cl. 37—141 T **5 Claims**



1. A router bit assembly for an earth working apparatus (10,12) comprising:

earthworking means including a generally (18) horizontally elongated blade with a generally vertically extending side member (22) at at least one end of the blade;

a router bit (32) formed of plate metal extending along said side member and in proximity to said blade;

a support (34) for said router bit interposed between said router bit and said side member and having a first lip (36) overlying and substantially abutting the upper extremity (38) of said router bit and a second lip (40) underlying the lower extremity (30) of said side member; and

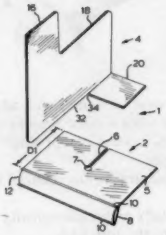
removable means (50) securing said router bit and said support to said side member.

4,208,818

DISPLAY DEVICE

Barry T. Butcher, Toronto, Canada, assignor to Loblaws Limited, Toronto, Canada

Filed Mar. 13, 1978, Ser. No. 885,919
Claims priority, application Canada, Mar. 1, 1977, 272919
Int. Cl.[2] G09F 3/20
U.S. Cl. 40—16.2 **4 Claims**



1. A display device for displaying two or more articles on a store shelf, comprising:

(1) a base portion including;

(a) a flat sheet having a lower surface adapted to overlie said shelf in a generally horizontal position and having an upper surface adapted to have said products placed thereon,

(b) a sign holder of flexible plastic material connected to the front of said flat sheet, said sign holder extending forwardly and downwardly from said flat sheet when said flat sheet is in a horizontal position,

(c) said sign holder including means for retaining and displaying a pricing display thereon,

(2) and a flag portion connected to said base, said flag portion extending in a front to rear direction and bisecting said base, said flag portion being of thin flexible plastic material and extending vertically upwardly from said base when said base is in horizontal position, said flag portion having a rear divider part having an upper edge, said flag portion also having a front flag part, said entire front flag part being located forwardly of said flat sheet and said front flag part extending substantially above said upper edge of said rear divider part, for increased visibility from the side thereof,

(3) said entire front flag part being located above the level of said lower surface of said base, so that said front flag part will not interfere with movement of products onto or off a shelf located below said first mentioned shelf.

4,208,819

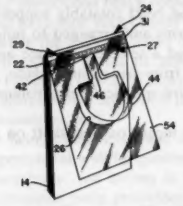
BOTTLE-ENGAGING INFORMATION PIECE

John H. Jones, Westfield, and Patrick Hipko, Milltown, both of N.J., assignors to Beatrice Foods Co., Chicago, Ill.

Filed May 26, 1978, Ser. No. 909,773
Int. Cl.[2] G09F 3/00
U.S. Cl. 40—310 **6 Claims**

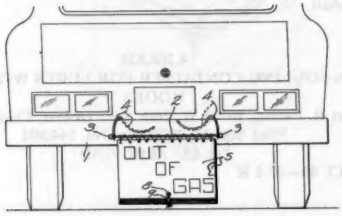
1. A display device for containers which have a neck, comprising:

(a) a plural sheet booklet having its pages joined along a common line and having front and back pages,
(b) a separate flat relatively spring-like container engaging member glued to the back sheet adjacent the common line,
(c) the container engaging member having a central cut-out opening with a periphery for engaging the neck of the container and oriented such that the neck can project



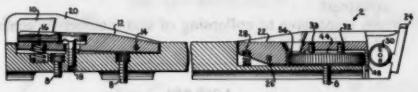
upwardly through the cut-out section separating the back sheet and the container engaging member thereby pressing them apart, flexing the container engaging member and forcing the booklet against the bottle in an outwardly disposed position, and
(d) the periphery of the central cut-out opening being shaped to provide a flexible locking member which engages the neck of the container.

4,208,820
SIGN FOR DISABLED MOTORIST
Edwin L. Cole, P.O. Box 135, Jasper, Oreg. 97401
Filed Jul. 28, 1978, Ser. No. 928,956
Int. Cl.[2] G09F *21/04*
U.S. Cl. 40—591 **1 Claim**



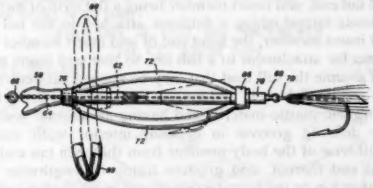
1. A sign for use by the operator of a disabled vehicle, said sign comprising,
a rod,
manually bendable wires one each affixed to each end of said rod and adapted for manual bent engagement with a vehicle component such as the vehicle bumper, said wires are each coated with a resilient material so as to avoid damage to the vehicle surfaces,
a multitude of signs each of a pliable nature and each displaying a message for the notification of passing motorists as to the nature of the emergency encountered by the disabled vehicle operator, each of said signs defines an aperture, a tie insertable through said aperture to retain the signs against fluttering by the wind, and
means interconnecting the upper margin of each of said signs with support rod so as to permit sign rotation thereabout enabling selected display of one of said signs, said interconnecting means is in the form of a spiraled wire member.

4,208,821
VARIABLE RANGE SIGHT
Ronald W. Power, Independence, Mo., assignor to Power Custom, Inc., Independence, Mo.
Filed Nov. 24, 1978, Ser. No. 963,188
Int. Cl.[2] F41G *1/28*
U.S. Cl. 42—1 S **14 Claims**



1. In a gun having a sight on an adjustable leaf, the improvement comprising:
an elevation control having first and second selectively operable components associated with said leaf for raising or lowering the leaf to selectively elevate the sight,
means for mounting said control on said gun with said components disposed one above the other,
said first component comprising an elevation wheel for setting the sight at any one of a plurality of incremental elevations thereof, said wheel being rotatable about a generally vertical axis when the gun is held in a normal firing position,
said wheel having a plurality of angularly spaced, selectable positions corresponding to said plurality of incremental elevations of said sight,
said second component comprising a plurality of selectable elevation control elements angularly spaced about the axis of said wheel for supporting said leaf at any one of said plurality of incremental elevations of the sight,
each of said elements corresponding to a different one of said positions of the wheel and cooperating therewith to support the sight at the desired elevation when the wheel is in the corresponding selected position, whereby to control the elevation of the sight over a range of said incremental elevations thereof.

4,208,822
FISH LURE
Charles H. Bryant, 3 Sutton St., Uxbridge, Mass. 01569
Division of Ser. No. 688,043, May 19, 1976, abandoned. This application May 16, 1977, Ser. No. 797,322
Int. Cl.[2] A01K *85/01*
U.S. Cl. 43—42.02 **12 Claims**



1. A fishing lure comprising:
an elongate wire having means for attachment to a fishing line at its forward end and means for attaching a fishing hook to its rearward end;
a relatively heavy, massive head slideably mounted on the wire for movement longitudinally along the wire, said head being normally disposed at the forward end of the wire;
at least one resilient, flexible and deformable intermediate member attached to the head for movement therewith, the member extending rearwardly therefrom and being mounted at its rearward end to said wire;

said head being of sufficient mass so that upon imparting a sharp pull to the forward end of the wire, the trailing end of the wire and the trailing end of the intermediate member will be drawn forwardly toward the head;

said member being collapsible longitudinally of the lure as the trailing end of the member is drawn toward the head;

said member being constructed and arranged to resiliently urge the head toward its normal disposition forwardly along the wire after said member has been resiliently collapsed;

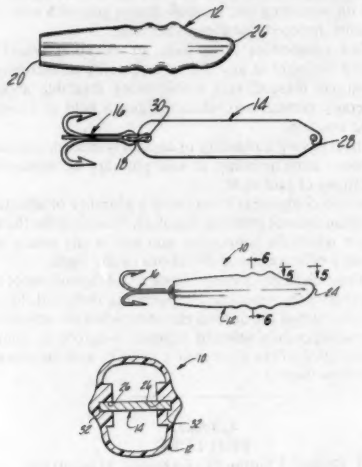
means responsive to collapsing of said member to generate an audible sound.

4,208,823

FISH LURE APPARATUS

Welcome D. Hershberger, 16135 Petro Dr., Mishawaka, Ind. 46544

Filed Nov. 3, 1978, Ser. No. 957,647
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.09 **4 Claims**



1. A fish lure comprising a hollow body member having head and tail ends and open at the tail end, an insert member removably fitted lengthwise into said body member through said tail end, said insert member being a flat strip of metal with opposite lateral edges, a fishhook attached to the tail end of said insert member, the head end of said insert member having means for attachment to a fish line so that said insert member will assume the full load that may be applied between the fish line and the fishhook, said hollow body member being formed of organic plastic material and having an internal wall structure defining grooves in opposite interior walls extending lengthwise of the body member from the open tail end to the head end thereof, said grooves fitting in lengthwise sliding relationship on the lateral edges of said insert so that a plurality of hollow body members with similar internal wall structures can be interchangeably used on said insert member.

4,208,824

FISH LURE

James D. Maxwell, P.O. Box 649, Vancouver, Wash. 98660

Filed May 5, 1978, Ser. No. 902,923
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.19 **2 Claims**

1. A fish lure comprising

(a) a shaft having opposite ends,

(b) one of said ends having means for a connection to a hook and the other end having means for connection to a fish line,

(c) a connector having a pair of parallel arms and a connecting end at one end of said arms forming a U-shape,

(d) said arms having a free end provided with apertures arranged to receive said shaft and arranged to support said connector at right angles to the shaft,

(e) a spinner blade on said connector arranged for rotation around said shaft with said connector,

(f) a first spherical bead rotatably supported on said shaft between said arms and arranged to hold the free end of said arms spaced a selected distance apart regardless of twisting forces from said spinner blade,

(g) second and third spherical beads rotatably supported on said shaft,

(h) and abutment means on said shaft on opposite sides of said connector,

(i) said second and third beads being disposed on respective opposite sides of said arms from said bead between said arms and said abutment means,

(j) said apertures in said connector arms being larger than the diameter of said shaft but smaller than the diameter of said beads,

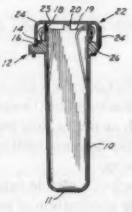
(k) the enlargement of said apertures being of such diameter as to receive a peripheral portion of said first bead from one side of one of said connector arms and to receive a peripheral portion of said second or third beads from the other side of said connector arm whereby upon pressured engagement of the pair of beads on opposite sides of said arm, said arm is supported on said pair of beads for rotation in suspended relation out of engagement with said shaft.

4,208,825

NON-FOULING CONTAINER FOR LURES WITH FISH HOOKS

Robert R. Barnes, 10735 W. 26th Ave., Denver, Colo. 80215

Filed Sep. 22, 1978, Ser. No. 944,902
Int. Cl.[2] A01K *97/06*
U.S. Cl. 43—57.5 R **6 Claims**



1. In a pocketsize storage container for internally containing separated fish lures having a hollow, open top container body with an upright peripheral wall, and a cover therefor, the improvement comprising:

(a) a plurality of depending spaced apart projections extending in general planar on top of and in alignment with the upright walls of the container body forming open slots therein, said projections extending generally at a uniform

height along the wall of the container body and generally peripherally of the open top of the container body;

(b) cover stop means provided on at least one wall of the body for holding and sealing the cover,

(c) cover lock means depending outwardly from the exterior of said cover stop means adjacent the open top permitting the cover to close over said projections and to lockingly close the open top;

(d) said spaced projections being constructed and arranged in a length to have their ends closely adjacent the inside of the cover when the cover is seated on the container body thereby providing a series of generally closed spaces around the top of the container body for holding the hook portion of hooks of fish lures with the remainder hanging inside the container, and,

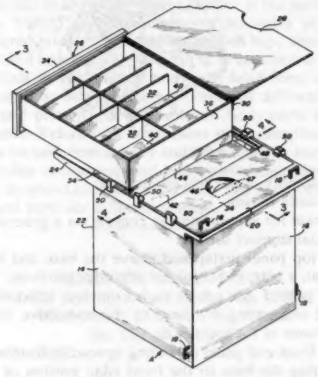
(e) the cover being constructed and arranged with a short extending peripheral wall for enclosing the top portion of the container body, and having at least one side spaced from the container body providing a space between the top of the wall of the container body and the short wall of the cover to contain the hook portion of the fish lures.

4,208,826

BUOYANT PORTABLE TACKLE BOX

Glenn H. Lindaman, 230 Driver Pl., Wescoesville, Pa. 18106

Filed Nov. 13, 1978, Ser. No. 959,926
Int. Cl.[2] A01K *97/06*
U.S. Cl. 43—57.5 R **10 Claims**



1. A tackle box intended to be worn on the person comprising:

(a) a generally parallelpipedal-shaped housing portion including a bottom, side walls, back wall and front wall sealingly engaging each other at their intersections to form a watertight open top casing;

(b) a plurality of generally parallelpipedal-shaped compartment trays, each of said trays including a removable lid, a bottom, side walls and a front and a back wall, said trays being of a size and shape to enable their placement in said housing parallel to each other with their back walls resting on said housing bottom;

(c) a plurality of bases, one for each tray including stops releasably mounted on each of said tray bases to prevent said base from inadvertently being disengaged from said housing, said bases being connected by hinging along one edge to said tray back wall edge to permit said tray, when in the upraised position, to swing frontward;

(d) handle means associated with said tray front wall to permit the upward drawing of said tray from said housing; and

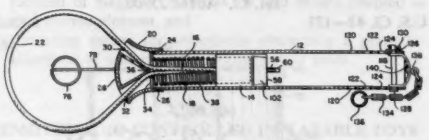
(e) gasket means associated with said open top and said tray fronts so that said gasket means, together with said tray front walls, define a sealed, closed top for said housing.

4,208,827

ADJUSTABLE ANIMAL TRAP

Henry L. Starkey, SR Box 90550, Fairbanks, Ak. 99701

Filed Mar. 10, 1978, Ser. No. 885,260
Int. Cl.[2] A01M *23/34*
U.S. Cl. 43—87 **11 Claims**



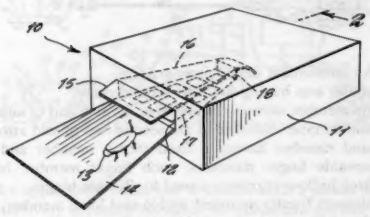
1. An animal trap, comprising a substantially tubular, elongated housing, spring loaded means movable longitudinally within said tubular housing between a set position and a released position defined by a stop member, and loop means for snaring an animal connected at least at one of its ends to said spring-loaded means so as to move therewith, said stop member having means for adjusting its position longitudinally within said housing for varying said released position of said spring-loaded means and the resulting size of the loop means protruding from the housing in said released position, wherein said spring-loaded means comprises a substantially cylindrical piston and spring means for urging said piston from said set position towards said released position, wherein said piston includes means for securing said loop means for snaring an animal thereto, wherein said loop means for snaring an animal comprises cable means having first and second ends at least one of which is secured by said securing means to said piston, said cable means extending outwardly from one end of said tubular housing to form a loop, wherein said securing means comprises a first aperture axially formed in said piston through which both said first and second ends of said cable means are positioned, and second and third apertures positioned transversely to and communicating with said first aperture, each of said second and third apertures receiving a threaded member for securing said cable ends.

4,208,828

ROACH TRAP

H. Hedley Hall, 98-38 57th Ave., Rego Park, N.Y. 11368, and George Spector, 3615 Woolworth Building, 233 Broadway, New York, N.Y. 10007

Filed Oct. 31, 1977, Ser. No. 846,810
Int. Cl.[2] A01M *1/14*
U.S. Cl. 43—114 **7 Claims**



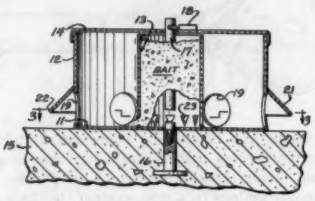
1. A roach catching trap, comprising in combination, a box having a raised entrance at one end, an external ramp leading to said entrance, a passageway tube inside said box aligned with said entrance, said tube including an inner end opening overlying a sticky removable surface on the floor of said box

including a rear end of said box having an access door for replacing said sticky surface, said tube including a roof within reach of the roachs' antennae having a downward sloping overhang extending beyond said opening.

4,208,829
BAIT STATION

George Manning, Chicago, Ill., assignor to Rocon Industries, Inc., Chicago, Ill.

Filed Jun. 12, 1978, Ser. No. 914,875
Int. Cl.[2] A01M *25/00*
U.S. Cl. 43—131 6 Claims

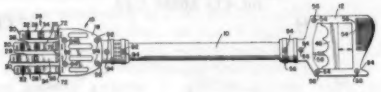


1. A bait station for delivering poisoned feed to a rodent feeding area therein, said bait station comprising, a bottom wall, an upstanding perimeter wall integral with the bottom wall, a bait container enclosed by the perimeter wall, a removable cover for the bait container of such size as to overlie the upper edge of the perimeter wall, an upstanding post extending upwardly through the bottom wall, the bait container and the cover, means anchoring the post to a surface beneath the bottom wall, a plurality of spaced openings in the perimeter wall closely adjacent to the bottom wall, means overlying a substantial portion of each opening to restrict access to said opening, a plurality of spaced openings in the container wall for delivering bait contained within the container, and means locking the cover in place, said opening overlying means comprising an outwardly-downwardly flared skirt on and surrounding the perimeter wall, said skirt having its free edge spaced from the surface a distance approximating one-half the dimension of said openings.

4,208,830
MECHANICAL HAND AMUSEMENT DEVICE

Kanji Yoshida, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan

Filed Nov. 9, 1978, Ser. No. 959,225
Int. Cl.[3] A63H *13/00*; A61F *1/06*
U.S. Cl. 46—1 R 1 Claim



1. An amusement device, comprising:
a tubular arm having first and second ends;
a grip member movably mounted at the first end of said arm;
a hand member mounted at the second end of said arm, said hand member having a fixed thumb member and four movable finger members, each finger member having three hollow segments joined by flexible hinges;
an element fixedly mounted within said hand member, each of said finger members being attached to said element by a flexible hinge, said element having four openings therein corresponding to said four finger members; and
means connecting said grip member and said four finger members for curling said four finger members when said grip member is squeezed and restoring said four finger members to their former positions when said grip member is no longer squeezed, said means including a rod having a first end connected to said grip member and a second end terminated in a hook, said rod extending through said tubular arm into said hand member, a displaceable member movably mounted within said hand member, a metal strip fixedly mounted to said displaceable member and secured to said hook, four flexible straps corresponding to said four finger members, each of said straps having a first end attached to said displaceable member and a second end attached to the terminal segment of said corresponding finger member, each of said straps extending through the remaining segments of said corresponding finger member and through the corresponding opening in said element, spring means for biasing said displaceable member away from the second end of said tubular arm.

4,208,831
DRIVING SIMULATOR TOY

Manfred Strauss, Randolph, N.J., assignor to Shelcore, Inc., New York, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,611
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—1 B 13 Claims

13. An activity center toy comprising:
(a) a console having
(i) a base for supporting the console on a generally horizontal support surface,
(ii) a top panel juxtaposed above the base and having a front, a rear, and a pair of side edge portions,
(iii) a pair of side panels each extending upwardly from and connecting the base to the respective side edge portions of the top panel,
(iv) a front end panel extending upwardly from and connecting the base to the front edge portion of the top panel,
(v) a rear end panel extending upwardly from and connecting the base to the rear edge portion of the top panel, and
(vi) all of said side and end panels maintaining said top panel at an elevated position above the support surface;
(b) at least one amusement-type device mounted on the console within easy reach of a child seated at the same on the support surface; and
(c) low-slung seat environment simulator means on the console for permitting a child to operate said one amusement-type device while being seated at the console with legs outstretched so as to create a play environment, including
(i) means at the rear of the console for defining a rear cutout which extends forwardly along a central portion of the top panel for a distance sufficient to accomodate the lower torso of the seated child, at least one of said amusement-type devices being mounted on said top panel laterally of said rear cutout and rearwardly of said top panel central portion said rear cutout also extending upwardly along a central portion of the rear panel for a distance sufficient to accomodate the upper thigh region of the seated child,
(ii) means at the front of the console for defining a front

cutout which extends upwardly along a central portion of the front panel for a distance sufficient to accomodate the legs of the seated child, and

(iii) said front and rear cutouts being aligned with one another and together forming a tunnel-like structure which accomodates the outstretched legs of the seated child to thereby simulate a low-slung seat environment.

4,208,832

CONSTRUCTIBLE ANIMAL DOLL

Renée D. Corriveau, 27570 Spring Valley, Farmington, Mich. 48024

Filed Jul. 31, 1978, Ser. No. 929,306
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—22 **10 Claims**

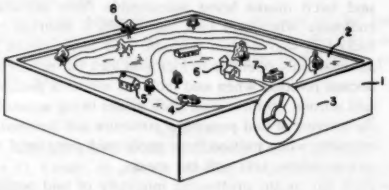
10. A constructible stuffed fabric animal doll comprising: a central body and head form of fixed size and shape, said body having affixed thereto at the legs, arms (wings), and tail positions, and said head having affixed thereto at the ears and nose positions, Velcro type attachment strips; and a plurality of dismembered body parts including various legs, arms (wings), tails, ears and noses that are adapted to be attached at appropriate locations to said central body and head form in various arrangements so as to create a plurality of different animals, each of said plurality of dismembered body parts having affixed thereto Velcro type attachment strips complimentary to the strips on said central body and head form, at least some of said plurality of dismembered body parts being attachable at different locations on said central body and head form to serve as different parts for different animals.

4,208,833

REALISTIC DRIVING TOY

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed Jun. 9, 1978, Ser. No. 914,230
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—240 **24 Claims**



1. A driving toy which comprises, in combination

(a) a housing including a playing surface,

(b) a vehicle positionable on said playing surface and having a first element of magnetic material secured thereto, and

(c) control means for controlling movement of said vehicle, said control means comprising,

(d) a second element of magnetic material positioned beneath said playing surface and magnetically couplable to said first element of magnetic material, at least one of said elements being a magnet,

(e) first means coupled to said second element for moving said second element along a first line, second means coupled to said second element for moving said second element along a second line different from said first line, a first motor at a fixed location coupled to said first means and controlled by said steering means for selective movement of said first means and a second motor at a fixed location coupled to said second means and controlled by said steering means for selective movement of said second means,

(f) disc means having plural sets of electrically conductive areas thereon for controlling movement of said second element of magnetic material via said means coupled to said second element, and

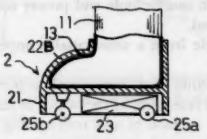
(g) steering means for selectively contacting a predetermined set of said electrically conductive areas.

4,208,834

REMOTE RADIO CONTROLLED INFLATABLE TOYS

Pin-Houn Lin, Taipei, Taiwan, assignor to Mando International Corp., Taipei, Taiwan

Filed Jul. 27, 1978, Ser. No. 928,774
Int. Cl.[2] A63H *30/04, 3/06, 3/50*
U.S. Cl. 46—254 **11 Claims**



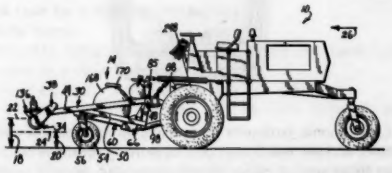
1. In a toy of the type comprising a figure mounted on a remote radio controlled mobile base which moves in response to radio signals emitted from a manually actuable signal emitter, the improvement wherein said base includes abutment surface means, said figure being inflatable and includes an inflatable bottom portion which, upon inflation of said figure, is expandible to engage said abutment surface means to retain said figure on said base, said bottom portion being contractible upon deflation of said figure to break said retaining engagement with said abutment surface means.

4,208,835

HERBICIDE APPLICATOR

Dwight M. Roll, Roseau; Myron L. Kofstad, Warroad, and Charles H. Habstritt, Crookston, all of Minn., assignors to Roller, Inc., Roseau, Minn.

Filed Apr. 12, 1978, Ser. No. 895,627
Int. Cl.[2] A01C *23/00*
U.S. Cl. 47—1.5 **18 Claims**



1. An apparatus for use with a vehicle with a power source for selectively applying herbicide to weeds and the like comprising:

an elongated roller having an absorbent outer surface and a generally horizontal longitudinal axis;

a support frame;

means carried by said support frame for mounting said roller for rotational movement of said roller about said axis;

means coupled to said roller and said power source for rotating said roller about said axis in a direction to cause upward wiping movement of said absorbent outer surface against weeds and the like as the vehicle is moved forwardly over the ground, whereby herbicide is applied to the underside of the weed leaves as the leaves are contacted by the roller; means coupled to said power source for supplying herbicide to said outer surface of said roller;

means for controlling the amount of herbicide appllied to weeds by said roller, said control means being operable by an operator as varying weed conditions are encountered to adjust the amount of herbicide applied to the weeds, said herbicide application control means including flow control means, said flow control means being independently controllable relative to said power source for controlling the amount of herbicide supplied to said outer surface of said roller; and speed control means for controlling the rotational speed of said roller, said speed control means being independently controllable relative to said power source whereby the amount of herbicide supplied to the roller and the rotational speed of the roller can be adjusted by the operator as varying weed conditions are encountered such that an effective amount of herbicide is applied to the weeds without herbicide dripping from said roller with said vehicle and power source operating at a given speed,

a wiper made from a substantially imperforate, non-bristle material;

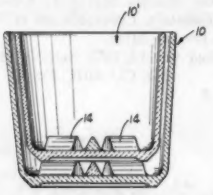
means mounting said wiper with a portion of said wiper adjacent a free edge of the wiper in rubbing contact with said outer surface of said roller along the length thereof whereby herbicide can be applied generally evenly along the length of said roller.

4,208,836

JARDINIERE AND METHOD OF MAKING SAME

Siegfried Kramer, 227 Alabama Ave., Sebring, Ohio 44672

Filed Jul. 26, 1976, Ser. No. 708,293
Int. Cl.[2] **A47G** *7/00*
U.S. Cl. 47—72 **7 Claims**



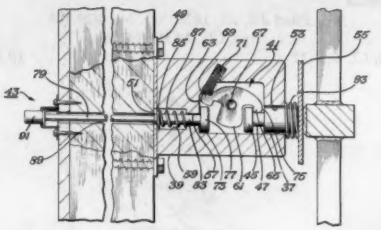
1. A ceramic jardiniere comprising an integral sidewall and bottom section and flower pot supporting means providing at least three spaced edges raised above and integral with said bottom section, one of said edges being located on one side of a diameter bisecting said bottom section and at least one of the other of said edges having points located on the opposite side of said diameter, said walls and bottom section are glazed, said bottom section having an unglazed foot, the spaced edges of said supporting means being glaze-free, and said supporting means being of a vitrified ceramic material and made integral with the upper surface of said bottom section by a vitrified glaze fused to said bottom section and said support means.

4,208,837

WINDOW GUARD HAVING BOXED RELEASE

William R. Black, Sr., and Gerald L. Sams, both of Fort Worth, Tex., assignors to Alvis Neely, Fort Worth, Tex.

Filed Oct. 16, 1978, Ser. No. 951,724
Int. Cl.[2] **E06B** *9/02;* **E05C** *3/28*
U.S. Cl. 49—56 **4 Claims**



1. In a security system having a peripheral structure extending around an area whose access is to be controlled and providing controlled access to the area and having a hingedly mounted guard element traversing an opening allowing at least emergency ingress and egress into and from said area; hinged mounted means hingedly mounting the guard element adjacent one of its ends onto the peripheral structure adjacent said opening for pivotal movement of said guard element outwardly to provide egress through said opening; and releasable fastening means connected with the guard element at its free end and operable to hold the guard element closed against egress from within or ingress from without in a normal position, the improvement; comprising:

a. a lock bar means connected to said guard element and lockably positionable within a lock housing of said releasable fastening means for locking said guard element in its normal closed position;

b. a lock housing that is connected with said peripheral support;

said lock housing having interiorly thereof latch means for locking said lock bar means into its said normal position; said latch means being inaccessible from outside said enclosure when said lock bar means is inserted in and locked in said normal position; said latch means being automatically operable to lock said lock bar means in said normal position when said lock bar means is pushed into said normal position; said latch means being accessible to the interior of said peripheral structure and automatically operable when pushed from inside said peripheral structure to release said lock bar means;

c. push bar means protruding interiorly of said peripheral structure and operable to push said latch means to release said lock bar means and said guard element;

said lock bar means having a shoulder and adjacent groove at its interior end for being releasably latched in said normal position; said push bar means including a portion having a shoulder adjacent its outer end for pushing on said latch means, and, in turn, being held in a released position until said lock bar means is inserted in said normal position; said latch means including an overcenter actuating member and respective shoulder latches at its respective exterior and interior ends for engaging, respectively, said lock bar means in said normal position and said push bar means in said release position.

4,208,838

LATCH HARDWARE

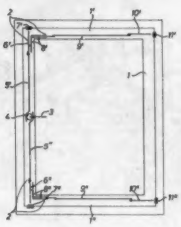
Ewald Kleine, Siegen, and Ernst Roth, Wilnsdorf, both of Fed. Rep. of Germany, assignors to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,118

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706013

Int. Cl.[2] E05D *15/52*

U.S. Cl. 49—192 **7 Claims**



1. Latch hardware for windows and door frames provided with frame members having grooves which are substantially cross-shaped in cross-section including lateral undercut portions and a base portion extending below the undercut portion, said latch hardware comprising:

(a) at least two drive rods displacably guiding within the undercut portions, respectively of two adjacent frame members extending at an angle to one another to form a corner,

(b) latch elements connected to each drive rod,

(c) an L-shaped corner guide element positioned in the corner of said frame members, one leg of the guide element being disposed within the groove of the adjacent frame member and having a cross-section which substantially fills said groove, the other leg of the corner guide having a cross-section which fills the base of the groove of the adjacent frame member and has a longitudinal slot on the side facing the adjacent frame member,

(d) a pair of connecting elements connected, respectively, to said two drive rods, one of the connecting elements being slidable within said longitudinal slot and the other connecting element being guidingly mounted with respect to said one leg of the guide element,

(e) a flexible re-directing member extending within the corner guide element for connecting the pair of connecting elements, and

(f) clamping means located in the grooves of the frame members outside of the movement area of the drive rods for clamping the corner guide element in the corner position within the frame.

4,208,839

LID OPENER FOR STORAGE CONTAINER

James O. Candy, Sr., Jones Hastings Rd., Parsonsburg, Md. 21849

Continuation-in-part of Ser. No. 781,435, Mar. 25, 1977, abandoned. This application Jul. 11, 1978, Ser. No. 923,491

Int. Cl.[2] E05F *11/08*

U.S. Cl. 49—344 **8 Claims**

1. An improved opener for the pivotal lid of a tall storage container, which opener comprises, in combination:

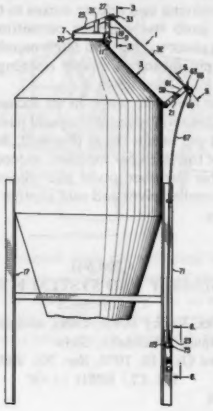
(a) a handle pivotable between a first overcenter point for locking the lid in an open position and a second overcenter point for locking the lid in a closed position;

(b) a first pivotal bracket for attachment to the container and lid for opening and closing the lid in response to the pivotal movement of the first pivotal bracket;

(c) a second pivotal bracket for attachment to the container;

(d) a first link for operatively joining the first and second pivotal brackets;

(e) a second link of elongate configuration and flexible along the length thereof for operatively joining the second pivotal bracket and the handle; and



(f) means for guiding the movement of the second link during pivoting of the handle between the first and second overcenter points.

4,208,840

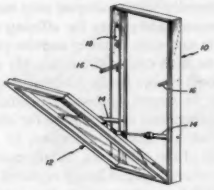
SAFETY VENT

Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.

Continuation of Ser. No. 799,224, May 23, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,637

Int. Cl.[2] E05F *1/00*

U.S. Cl. 49—379 **15 Claims**



1. A vent for a building comprising;

a fixed frame,

a movable frame adapted to close against the fixed frame when in a closed position,

a panel means for insertion into the movable frame,

means for pivotally securing said movable frame to said fixed frame,

means for urging said movable frame to an open position,

means on said fixed and movable frames for limiting the open position of said movable frame,

latch means for maintaining said movable frame in the closed position including a latch member,

means for pivotally securing the latch member to one of said frames,

an elongated latch bar member having base means at one end including means for pivotally securing the latch bar member to the other frame and pin means supported by said base means and disposed between the pivotal securing means of said latch member and the latch bar member,

respectively, and means for urging said latch member to a dwell position,

and means for releasing said latch means to permit said movable frame to move to its open position including release means which in one position maintains another end of said latch bar member in a locked closed position and means for moving said release means to thereby disengage from said latch bar member permitting said latch bar member to pivot so that said latch member can disengage from said pin means to enable opening of the movable frame,

said latch bar member, when in its locked position, being disposed substantially parallel to said panel means with the axis of said pin means being disposed, in the longitudinal direction of the latch bar member, spaced from the axis of the latch bar member pivot and disposed between the latch bar member pivot and said another end of said latch bar member.

4,208,841

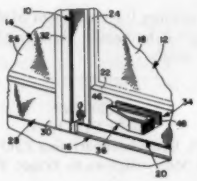
STOP ASSEMBLY AND SYSTEM FOR SLIDING CLOSURES

Emmett A. Starks, Rocky River, Ohio, assignor to Better-Way Products Company, Westlake, Ohio

Filed Oct. 10, 1978, Ser. No. 949,743

Int. Cl.[2] E05D *13/04*

U.S. Cl. 49—449 **13 Claims**



1. A stop assembly for employment with sliding closures including relatively sliding members that move relative to one another in spaced-apart parallel planes, said stop assembly comprising a generally wedge-shaped stop member, separable hook and loop means, and means for affixing one of said hook and loop means to said stop member and the other of said hook and loop means to such one of the relatively sliding members, said hook and loop means being adapted for mating engagement detachably to secure said stop member to one of the relatively sliding members at a location for abutment with the other of the relatively sliding members to restrict relative sliding movement of the relatively sliding members, said hook and loop means when engaged being resistant to separation in a direction parallel to such parallel planes and being readily separable in a direction normal to such parallel planes.

4,208,842

DUAL SURFACE LAPPING MACHINE

Ernest F. Katzke, Des Plaines, and Dennis E. Lindquist, Rockford, both of Ill., assignors to Crane Packing Co., Morton Grove, Ill.

Filed Jun. 12, 1978, Ser. No. 914,977

Int. Cl.[2] B24B *7/06, 53/02*

U.S. Cl. 51—111 R **8 Claims**

1. A dual surface lapping machine comprising:

(a) a machine bed;

(b) parallel linear guide ways mounted on opposite sides of said machine bed;

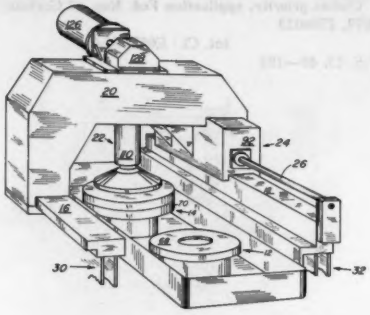
(c) at least one lower spindle unit mounted in said bed, said at least one lower spindle unit having a lapping ring drive plate and a lapping plate mounted thereon;

(d) frame means supported upon said parallel linear guide ways and being translatable thereon;

(e) an upper spindle unit mounted in said frame means, said upper spindle unit having a lapping ring drive plate and a lapping plate mounted thereon;

(f) a dressing tool;

(g) said drive plates having surfaces which lie in parallel planes and include means for mounting said dressing tool



for dressing the lapping plates of the opposite spindle unit; and

(h) means for effecting straight line translatable movement of said frame means and upper spindle unit along said guide ways.

4,208,843

GRINDING ATTACHMENT FOR PORCELAIN BODIES

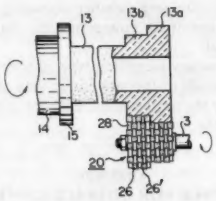
Takashi Amaki, and Mitsutoshi Mamiya, both of Aichi, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 18, 1978, Ser. No. 934,871

Claims priority, application Japan, Aug. 27, 1977, 52-114796[U]

Int. Cl.[2] B24D *5/14*

U.S. Cl. 51—207 **1 Claim**



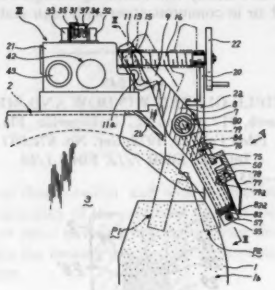
1. A grinding attachment for porcelain bodies, comprising a rotary shaft and a plurality of grinding wheels concentrically mounted on said rotary shaft, each grinding wheel of the grinding wheels including a circular support disk and a plurality of grindstone pieces secured on the peripheral surface of said support disk in spaced relation with one another and having their arcuate end surfaces extended on one and the same circumferential surface, with the width of the grindstone pieces being slightly larger than the thickness of the support disk, said grinding wheels being arranged so that the grindstone pieces of one wheel overlap the spaces between the grindstone pieces secured on the adjacent grinding wheels in the axial direction when assembled.

4,208,844

GUARD DEVICE WITH DRESSING APPARATUS FOR GRINDING WHEEL

Yoshinobu Suzuki, Aichi, and Toshio Maruyama, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

Filed Feb. 26, 1979, Ser. No. 15,241
Claims priority, application Japan, Feb. 27, 1978, 53-21942
Int. Cl.² B24B *55/04*
U.S. Cl. 51—268 **8 Claims**



1. A guard device for a grinding wheel in a grinding machine comprising:

a guard body for covering said grinding wheel;

a front cover member pivotably mounted upon said guard body for covering the upper-front portion of said grinding wheel;

a hinge shaft carried in a direction parallel to the axis of said grinding wheel for pivotably supporting said front cover member;

a screw shaft rotatably supported upon said guard body above said hinge shaft in a direction perpendicular to the axis of said hinge shaft;

a nut member threadedly engaged with said screw shaft for pivotably moving said front cover member through the axial movement thereof caused by the rotation of said screw shaft;

means mounted upon said guard body for rotating said screw shaft;

a pair of leg portions extended from the lower end of said front cover member to be receivable said grinding wheel within a space formed therebetween;

a closing cover detachably secured to said front cover member for covering the space formed between said pair of leg portions; and

a pair of dressing tools respectively mounted upon said pair of leg portions for dressing side surfaces of said grinding wheel.

4,208,845

METHOD FOR GRINDING PISTON RINGS

Robert L. Sharpe, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 779,281, Mar. 18, 1977, Pat. No. 4,123,072. This application Sep. 29, 1978, Ser. No. 947,203
Int. Cl.² B24B *1/00*
U.S. Cl. 51—290 **5 Claims**

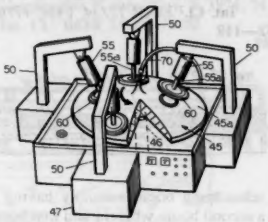
1. The method of simultaneously manufacturing a plurality of split piston rings for a fluid pressure system wherein the rings have at least one inwardly converging surface including the steps of:

constraining the rings;

placing the constrained rings adjacent a spherical surface having abrasive material thereon capable of contouring the inwardly converging ring surfaces, wherein said spherical surface is in excess of the diameter of the constrained rings to define a tangential engagement between said inwardly converging ring surfaces and the spherical surface;

causing the spherical surface to rotate about its center; and

applying sufficient pressure to the constrained rings to cause the inwardly converging surfaces thereof to be brought



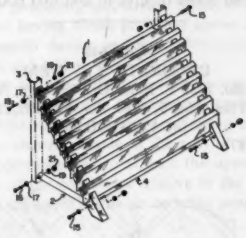
into intimate contact with the spherical surface along a path that is coincident with the axis of the rings and that is a radius of the spherical surface, for an interval to cause the contacting ring surfaces to be conveniently ground to a curved cross-section across the width thereof.

4,208,846

AWNING

William C. Griebel, 291 Portwind Pl., Ballwin, Mo. 63011

Filed Aug. 22, 1978, Ser. No. 935,983
Int. Cl.² E04F *10/08*
U.S. Cl. 52—74 **8 Claims**



1. An awning suitable for attachment to a window or door frame of a building structure, said awning comprising

(a) bracket means fixedly mounted on said building structure,

(b) a pair of spaced-apart vertical frame members fixedly attached to said bracket means, each of said frame members including means defining a downwardly and outwardly sloping slat-mounting surface,

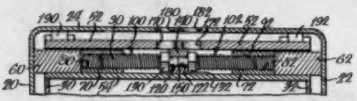
(c) a plurality of slots in said frame members, said slots extending through said slat-mounting surface,

(d) a plurality of slats, each of said slats extending through and being carried by frictional engagement with the sides of said slots, each of said slats including a broad body part constituting the major portion of said slat, said body part being held vertical, plus or minus twenty degrees, by said slots in said frame members.

4,208,847
LATERAL ADJUSTMENT STRUCTURE FOR TELESCOPING BOOM ASSEMBLY

Charles F. Gaura; John C. Volkman, both of Wausu, and Charles Cramlet, Rothschild, all of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 26, 1979, Ser. No. 15,469
Int. Cl.[2] E04H 12/34; F16C 17/00
U.S. Cl. 52—118 12 Claims



1. In a telescoping boom assembly having at least a first boom and a second boom wherein said first boom is adapted to receive a portion of a second boom therein and wherein said first and second booms are adapted to be laterally aligned through the transmission of lateral loading between said first and second booms, an improvement for adjusting the lateral displacement of said second boom relative to said first boom, said improvement comprising:

threaded adjustable wear block means for moving against a portion of said first boom;

bolt means for threadingly engaging said threaded adjustable wear block means;

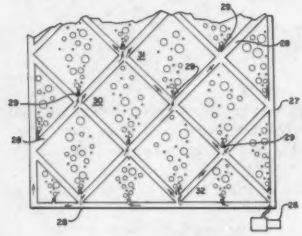
retainer means for restraining said adjustable wear block means against rotation relative to said bolt means and for retaining said bolt means in a fixed lateral position relative to said second boom while permitting said bolt means to be rotated by the application of an externally applied torque; and

engageable means provided on said bolt means for being engaged to rotate said bolt means relative to said threaded adjustable wear block means whereby said threaded adjustable wear block means is moved relative to said second boom to thereby vary the lateral displacement of said threaded adjustable wear block means relative to said second boom and thereby vary the lateral displacement of said second boom relative to said first boom.

4,208,848
DECORATIVE SYSTEM

Richard C. Kohl, 1335 E. Kaler Dr., Phoenix, Ariz. 85020

Filed Aug. 9, 1978, Ser. No. 932,213
Int. Cl.[2] E06D 7/62
U.S. Cl. 52—171 2 Claims



1. A decorative system including:

a. essentially-transparent containing means;

b. a decorative aqueous mixture within said containing means;

c. mechanical means for producing decorative movement within said aqueous mixture;

d. said decorative aqueous mixture including at least about one-half percent by volume of aluminum powder;

e. said mechanical means being constructed and arranged to bubble air through said decorative aqueous mixture;

f. said containing means being comprised of a windowpane structure having at least one hollow portion therein containing said decorative aqueous mixture;

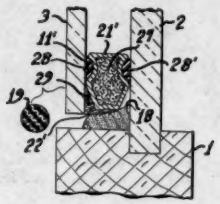
g. said hollow portion of said windowpane structure communicating with at least one air entry opening and at least one air exit opening; and

h. said containing means comprising multiple windowpane structures each having at least one said hollow portion therein and said system including a single source of compressed air in communication with each said hollow portion.

4,208,849
MULTIPLE GLAZED WINDOW AND METHOD

James V. Lamb, 917 Ashton St., Jacksonville, Fla. 32208

Filed Feb. 13, 1978, Ser. No. 876,897
Int. Cl.[2] E06B 7/12; E04B 1/66
U.S. Cl. 52—203 20 Claims



1. The method of adding a second pane of glass to an existing glass pane in a glazed sash, such second pane of glass having external dimensions less than the internal dimensions of the interior sash elements bounding the light of such existing pane, comprising the steps of sealingly bonding a spacing element to one face of said second pane, said element being disposed along a peripheral portion of said face immediately adjacent the edge of said face, bringing said second pane and spacing element into juxtaposition with the inner surface of such existing pane and with the edge of said second pane spaced inwardly from said sash elements, introducing sealant material into the space which is defined outwardly of said spacing element and inwardly of said sash elements and positioning such material in contact with that inner surface portion of said existing pane which lies between said spacing element and said sash elements, and thereafter causing said sealant to flow into intimate contact with and to seal between said spacing element and said surface portion of said existing pane by introducing a flexible resilient rod having an unstressed diameter greater than the distance between said edge of said second pane and said sash elements outwardly around said second pane and inwardly of said sash elements and forceably urging said rod into deforming contact with said sealant material in said space defined outwardly of said spacer element and inwardly of said sash elements.

4,208,850
CONNECTOR FOR KNOCK-DOWN CABINET

David L. Collier, 255 NW. 96th Ave., Portland, Oreg. 97229

Filed May 11, 1978, Ser. No. 904,851
Int. Cl.[2] E04C 1/10, 1/30; E04B 1/00, 5/00
U.S. Cl. 52—285 16 Claims

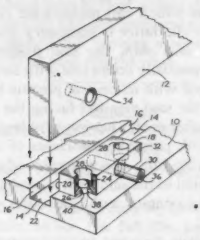
1. In combination with a pair of panels to be connected together, wherein one of the panels is provided with an abutment surface for the other panel, a panel connector comprising:

(a) a base member having a front side,

(b) a locking member mounted on the base member for movement between a retracted position rearwardly of said

front side and an extended position projecting forwardly of said front side, and

(c) securing means for securing the base member to said one panel with the front side of the base member facing but spaced from said abutment surface for reception of said



other panel therebetween, and with the locking member located outwardly of the profile of said one panel,

(d) said other panel having a locking opening therein registering with the locking member for removable reception of the latter.

4,208,851

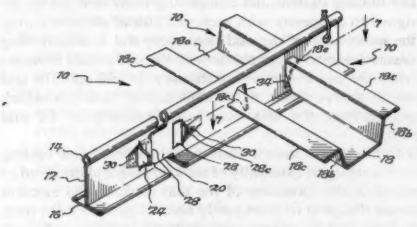
SUSPENDED CEILING SYSTEM

Gale E. Sauer, Williamsville, N.Y., assignor to Roblin Industries, Inc., Buffalo NY

Continuation of Ser. No. 771,063, Feb. 25, 1977, abandoned. This application Oct. 11, 1978, Ser. No. 950,433

Int. Cl.[2] E04B *5/55*

U.S. Cl. 52—573 **34 Claims**



1. A splice connection comprising: two generally aligned beam members each having a web means and a bead means surmounting said web means providing increased rigidity to said beam member, connecting means on adjacent ends of said web means splicing said beam members in an end-to-end relation, at least one of said connecting means comprising a tongue means extending beyond the end of said web means and said bead means, associated therewith and locking means interlocking said tongue means in an assembled relation to said beam members to prevent relative movement of said beam members with respect to one another, the adjacent ends of said bead means being normally spaced from one another and said tongue means being so configured to fold in a longitudinal manner, laterally out of the normal plane of said tongue means when said beam members are longitudinally compressed towards one another due to thermal expansion so that said bead means of said beam members become laterally displaced with respect to one another while moving towards one another in a longitudinal direction and the normal spacing between said beam means being of such extent that said bead means may longitudinally overlap one another when said beam members experience extreme relative longitudinal expansion.

4,208,852

PROCESS FOR THE ASEPTIC PACKING OF PRODUCTS AND MACHINE EMPLOYING SAID PROCESS

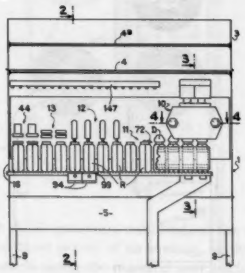
Michel M. R. Pioch, Saint Ramain de Colbosc, France, assignor to Pont-A-Mousson S.A., Nancy, France

Division of Ser. No. 629,830, Nov. 7, 1975. This application Jan. 23, 1978, Ser. No. 871,717

Claims priority, application France, Nov. 8, 1974, 74 37155

Int. Cl.[2] B65B *55/10, 31/02*

U.S. Cl. 53—167 **15 Claims**



1. A packing machine for aseptically packing a product and in particular a dairy product, said machine comprising:

an enclosure defining a space,

means for producing a stream of sterile air which sweeps through said space,

an extrusion-blowing first station including extrusion-blowing means for producing internally and externally sterile containers,

a container filling second station,

a container closing third station, and

a container transfer device within said enclosure for moving containers sequentially through said first, second and third stations, said stations all being within said enclosure space and in the path of said sterile air flow, and

said means for producing said stream of sterile air comprising air inlets having filters provided above said stations and said transfer device and air outlets provided under said stations and said transfer device,

said containers having orifices having upwardly towards said air inlets and wherein said moving mechanical parts of the machine which are capable of being contaminated being either located outside of the part of the stream of sterile air corresponding to at least the upstream side of the orifices of the containers relative to the direction of flow of the stream of sterile air or being protected therefrom.

4,208,853

CUT-OFF MECHANISM FOR WRAPPING MACHINES

William J. English, 32 Pierce St., West Boylston, Mass. 01583, and Donald C. Dechant, 22437 Fairlawn Cir., Cleveland, Ohio 44126

Filed Dec. 11, 1978, Ser. No. 968,076

Int. Cl.[2] B65B *41/12, 61/06, 67/08*

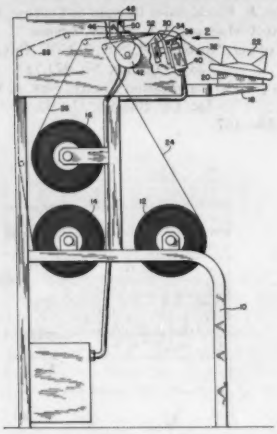
U.S. Cl. 53—389 **4 Claims**

1. In a wrapping machine, a source of wrapping material, means guiding the wrapping material to an operative wrapping station,

a cut-off member, a rotary arm mounting the cut-off member, a rotary solenoid for operating the rotary arm,

a switch under control of the tension of the web as it is led

to the wrapping station, said switch actuating the solenoid for a single motion in a direction to sever the web in a



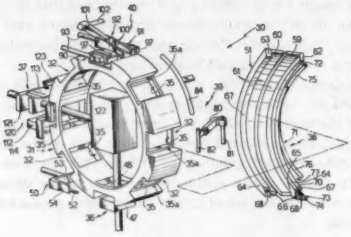
predetermined location leaving an extending end thereof for the convenience of the wrapping operator.

4,208,854

DEVICE FOR FOLDING BLANKS OF SHEET MATERIAL IN MACHINES FOR PACKAGING ARTICLES, PARTICULARLY CIGARETTES, INTO HINGED-LID PACKETS

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Aziori, Bologna, Italy

Filed Sep. 26, 1978, Ser. No. 945,807
Claims priority, application Italy, Sep. 26, 1977, 3559 A/77
Int. Cl.[2] B65B *11/28*
U.S. Cl. 53—575 **14 Claims**



1. An apparatus for folding cutout elements in machines for packaging articles, in particular cigarettes, to obtain rigid packets of the hinged-lid type, the apparatus comprising:

a step-by-step conveyor moving along a substantially circular path and having a plurality of recesses each of which is designed to receive a respective article together with a respective cutout element;

a plurality of folding stations successively arranged along the said path, each station comprising folding means arranged to cooperate with the said cutout elements to fold the same along pre-formed folding lines and around respective articles, the first of the said stations being an insertion station arranged to insert the said cutout elements inside a respective recess in the conveyor, and the last of the said stations being an outlet or discharge station for discharging the packaged articles from the conveyor; characterized in that each of the said recesses is radially outwardly and laterally open with respect to the said path; and that the said first station comprises:

a folding mandrel or frame arranged in a fixed position outside the said path and delimiting a passage having a cross-section substantially equal to that of the said articles and the said recesses and being oriented in substantially radial direction with respect to the said path;

first pusher means which can reciprocate through the said conveyor when the latter is stationary and radially with respect to the said path, the said pusher means being designed to sequentially cooperate with each of the cutout element arranged with its central portion in contact with an axial end of the said mandrel facing the said conveyor; the said first pusher means having a folding head designed to cooperate with peripheral portions of the said cutout element projecting from opposite sides of said mandrel in a direction parallel to the said path to push the said peripheral portion into contact with said outer surface of said mandrel;

second pusher means designed to successively support the articles to be packaged and being adapted to reciprocate, when the said conveyor is stationary, to move each of the said articles inside the said mandrel and into contact with its respective cutout element;

support means adapted to reciprocate along the said path and to keep each an article and its respective cutout element inside its recess; the said support means having arms designed to cooperate, during motion of the support means, with that part of one of the side folded portions of the said cutout element, projecting from the said recess to fold parallel to the said path; and fixed folding means designed to cooperate during movement of the said conveyor, with the part of the other of the said side folded portions of each of said cutout element, which projects from the said respective recess to fold it parallel to the said path;

folding stations arranged between the said first and the said last folding stations and comprising fixed cam means designed to cooperate with each said cutout element during the movement of the said conveyor; and mobile folding means designed to cooperate with the said cutout elements when the said conveyor is stationary, to fold onto the said article the portions of the said cutout elements which project from the said recesses transversely of the said path;

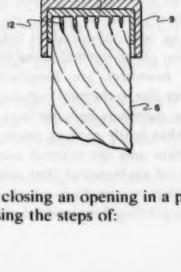
and the said last station comprising second fixed folding means arranged externally of the said path and designed to complete the formation of the said packets, and ejection means designed to eject partly formed packets from their recesses and in engagement with the said second fixed folding means.

4,208,855

CLOSURE FOR FLEXIBLE RECEPTACLE

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

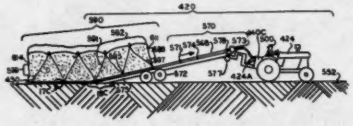
Filed Jan. 16, 1978, Ser. No. 870,047
Int. Cl.[2] B65B *7/12, 51/08*
U.S. Cl. 53—417 **9 Claims**



1. A process for closing an opening in a pre-formed flexible receptacle comprising the steps of:

(a) coating the outer surface of the pre-formed receptacle which is immediately adjacent said opening with a cold flowing resin; then,
(b) gathering said coated portion of the receptacle into compact folds; and
(c) applying sufficient pressure to said gathered portion to cause said resin to cold flow within the folds and to exude from the outer end of said gathered portion thereby filling the voids therein and forming a hermetic closure for the receptacle from said exuded resin.

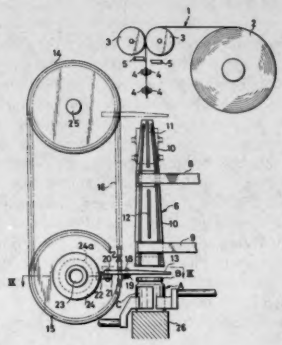
4,208,856
FIELD TO COTTON GIN HANDLING AND STORAGE SYSTEMS
Glover A. Husky, Lubbock, Tex., assignor to Allied Products Corp., Chicago, Ill.
Division of Ser. No. 759,392, Jan. 14, 1974, Pat. No. 4,127,061, which is a division of Ser. No. 568,004, Apr. 14, 1975, Pat. No. 4,031,003, which is a continuation-in-part of Ser. No. 513,145, Oct. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 428,384, Dec. 26, 1973, Pat. No. 3,879,049. This application Sep. 11, 1978, Ser. No. 941,175
Int. Cl.[2] B65B *1/24*
U.S. Cl. 53—438 **3 Claims**



1. Process of loading and transporting seed cotton comprising the steps of
(a) vertically compressing a longitudinally continuous mass of seed cotton free of lateral compression of a horizontally extending support,
(b) applying a water-impermeable cover to the top of said compressed mass and connecting said cover to said support peripherally to said mass, then
(c) serially moving successive increments of said covered mass upwards along an inclined surface while concurrently moving other portions of said longitudinally continuous mass horizontally towards said inclined surface and forming successive temporarily downwardly convex portions at the bottom of the longitudinally continuous mass and successive temporarily upwardly concave portions at the top of said longitudinally continuous mass while limiting the compression of the material in said mass at the upper portion of said mass to prevent lateral extrusions from the side thereof by the step of limiting the radius of curvature of the downwardly convex portion to a predetermined minimum size of radius of curvature.

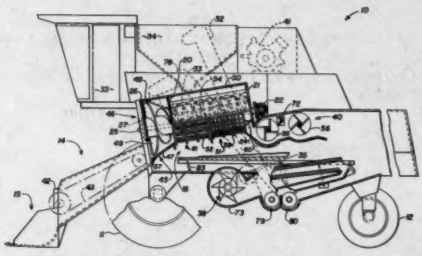
4,208,857
SLEEVE SEAL FITTING MACHINE
Masaaki Fujio, 3-15-8, Aoyamadai, Suita-shi, Japan
Filed Jun. 16, 1978, Ser. No. 916,286
Claims priority, application Japan, Jun. 27, 1977, 52/75580
Int. Cl.[2] B29C *27/00*
U.S. Cl. 53—585 **4 Claims**

1. A sleeve seal fitting machine, for fitting a sleeve seal over an object, comprising:
a streamline-form mandrel adapted to be positioned with its lower end over the object, the size of the lower end being greater than that of the object;
a means for supplying the sleeve seal to the upper end of the mandrel;
a feed member for pushing the sleeve seal along the mandrel toward the object;
an upper and a lower means for clamping the mandrel, which are adapted both to hold the mandrel and to move it axially towards and away from the object, and which bear on axially different parts of the mandrel;



and flexible guide members mounted on the mandrel which resiliently stand proud of its surface, so that as the sleeve seal is pushed along the mandrel said guide members tend to prevent it twisting.

4,208,858
ISOLATED PNEUMATIC CLEANING SYSTEM
Edward W. Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Feb. 12, 1979, Ser. No. 11,353
Int. Cl.[2] A01D *45/02*; A01F *12/20*
U.S. Cl. 56—14.6 **8 Claims**



1. A harvesting and threshing machine comprising:
(a) a mobile frame adapted to be driven across a field of grain bearing crop material;
(b) a harvesting attachment mounted to the frame extending forwardly therefrom for removing crop material from the field and delivering it generally rearwardly;
(c) infeed means mounted on the frame receiving crop material from the harvesting attachment and conveying it generally rearwardly;
(d) at least one axial flow threshing and separating cylinder fastened to the frame and extending in a generally fore-and-aft direction along the frame for receiving crop material from the infeed means, the cylinder further having a threshing portion with a transversely arcuate concave and a separating portion rearward of the concave;
(e) transport means affixed to the threshing and separating cylinder for guiding the crop material rearwardly in a generally helical path within the cylinder;
(f) a fore-and-aft extending rotor means rotatably mounted in the threshing and separating cylinder, the rotor including threshing means adjacent the concave and crop engaging means adjacent the separating portion for urging crop material rearwardly concurrently with the separation of the grain therefrom when the rotor means is rotated;

(g) a primary cleaning and separating means including a fan generating an air flow to aid in separating lighter crop material from heavier grain, upper sieve means and lower sieve means, both extending in a generally fore-and-aft direction and movably fastened to the frame below and generally rearwardly of the rotor means;

(h) auxiliary separation and discharge means mounted transversely across the frame rearwardly of the rotor and above the primary cleaning and separating means, the auxiliary separation and discharge means further including a rotatable beater means and a separation grate adjacent and underlying the beater means; and

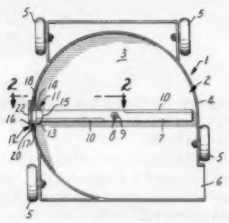
(i) grain collection means movably fastened to the frame underlying the auxiliary separation and discharge means and overlying at least a portion of the primary cleaning and separating means, the collection means further extending rearwardly so that the air flow generated by the cleaning fan is not disturbed by the rotation of the rotor means and the beater means during the operation of the machine.

4,208,859

LOCKING DEVICE FOR BLADE OF ROTARY LAWN MOWER

Charles E. Brockway, 1908 W. County Rd. E., St. Paul, Minn. 55112

Filed Oct. 23, 1978, Ser. No. 953,781
Int. Cl.³ A01D *75/18*
U.S. Cl. 56—255 **5 Claims**



1. In a rotary lawnmower comprising a mower housing, a device for preventing rotation of a rotary mower blade comprising

(a) a vertically extending base member,

(b) a pair of legs extending outwardly from said base member at one end thereof in spaced relation to each other to provide a channel between said legs for receipt of a rotary mower blade, said legs being connected to said base member at one end of said legs and spaced from said base member at the other end thereof to provide a groove between said legs and said base member for receipt of a portion of the vertical element of said mower housing, and

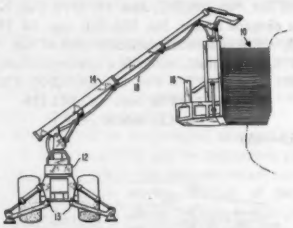
(c) means for causing a friction-fit of said device on said mower housing located at said groove between said legs and said base member.

4,208,860

CROP HARVESTING APPARATUS

John W. Edwards, Brandon, Fla., assignor to Ginny Bee Harvester Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 570,718, Apr. 23, 1975, Pat. No. 3,992,861, which is a continuation-in-part of Ser. No. 508,903, Sep. 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 410,262, Oct. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 386,421, Aug. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 362,453, May 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 350,168, Apr. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 339,914, Mar. 9, 1973, abandoned. This application Oct. 18, 1976, Ser. No. 733,374
Int. Cl.³ A01D *46/20*
U.S. Cl. 56—328 R **37 Claims**



1. A crop harvesting apparatus comprising:

a plurality of flexible, crop-severing rods having longitudinal axes and substantially circular cross-sections, said crop-severing rods having substantially straight longitudinal surfaces over the length thereof; said rods being made of material such that at rotational speeds of about 1000 to about 3000 rpm said rods flex and thereby transcribe orbital paths about the stationary positions of their respective longitudinal axes;

support means for rotatably supporting said crop-severing rods with their longitudinal axes substantially parallel, said crop-severing rods being mounted for rotation about their own longitudinal axes at speeds such that said rods flex and rotate orbitally about the stationary portions of their respective longitudinal axes, and said rods having a minimum edge-to-edge clearance such that immature crop may pass between said rods; and

drive means for rotating said crop-severing rods at rotational speeds between about 1000 and about 3000 **rpm at which said crop-severing rods flex and thereby transcribe orbital paths about the stationary positions of their respective longitudinal axes.**

4,208,861

MECHANICAL SHAKER ASSEMBLY FOR CONTINUOUS HARVESTING OF FRUIT

Bernard R. Tennes, Charlotte, and Galen K. Brown, Okemos, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,954
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—328 TS **7 Claims**

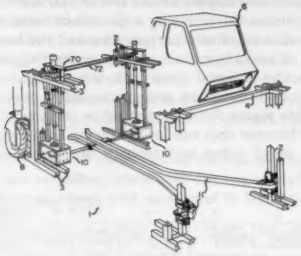
1. A mechanical shaker assembly apparatus adapted for attachment to an over-the-row power frame for continuous harvesting of horticultural crops, comprising:

first and second sway bars which are substantially parallel to one another for at least a portion of their length;

means for synchronously reciprocating said first

and second sway bars in a substantially constant spaced relationship with one another; and

first and second free-swinging pendulums fastened to



said first and second sway bars, respectively,

and having rotation about a pivot point for absorbing reaction energy generated by said reciprocating means.

4,208,862

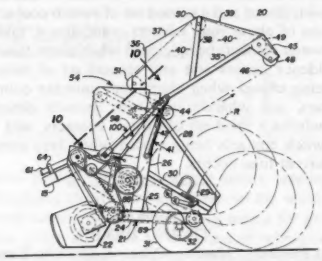
AUTOMATIC BALE EJECTION DRIVE

T. William Waldrop, New Holland, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,161

Int. Cl.[2] A01D *39/00*

U.S. Cl. 56—341 **28 Claims**



1. A roll forming machine for forming cylindrical bales of crop material which comprises:

(a) a generally upright mobile frame having opposing sides with an infeed area and an outlet area therebetween, the frame being adapted to travel across a field of crop material;

(b) a pickup mounted to the frame to gather crop material from the field and deliver it to the infeed area;

(c) bale forming means rotatably mounted on the frame movable in a predetermined path of travel, the bale forming means being reversibly rotatable along the path of travel in a first direction and an opposing second direction and defining in combination with the infeed and outlet areas in a bale forming region;

(d) drive means rotatably affixed to the frame;

(e) control means affixed to the frame movable between at least a first position and a second position for cooperative interaction with the drive means and the bale forming means to selectively cause the bale forming means to cease to be driven in the first direction and cause it to be driven in the opposing second direction when the control means is moved from the first position to the second position so that a completed crop bale is ejected rearwardly from the bale forming region through the outlet area onto the ground.

4,208,863

AGRICULTURAL MACHINE

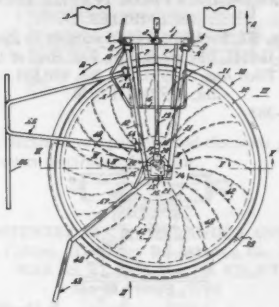
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Dec. 9, 1976, Ser. No. 749,172

Claims priority, application Netherlands, Dec. 12, 1975, 7514498

Int. Cl.[3] A01D *77/06*

U.S. Cl. 56—377 **99 Claims**



1. An agricultural machine for the displacement of crop, such as stalks, comprising a frame movable over the ground and a rotatable air-permeable screen that defines an interior air chamber supported on said frame, air displacing means in said air chamber and said screen having an outer crop-engaging surface, driving means connected to rotate said screen and said air displacing means about an axis, said air displacing means being positioned in said air chamber whereby it is caused by said rotation thereof to induce a pressure differential across said outer surface, whereby crop adheres to said screen due to suction and is moved during the rotation of the screen.

4,208,864

TUBE STRANDING MACHINE

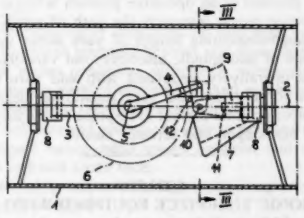
Günter Kaes, Xanten, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,579

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724419

Int. Cl.[2] D07B *7/06, 3/02*

U.S. Cl. 57—58.34 **6 Claims**



1. A high speed tube stranding machine which includes in combination: a rotor having an axis, a horizontally positioned spool carrier coaxially arranged with said rotor and rotatable relative thereto about said axis and adapted to receive and support a spool which can upset to cause danger of damage during turning movement of the spool carrier, and having a counterbalancing weight system to dispose the center of gravity of the spool carrier on one side of the axis of rotation of said spool carrier, said weight system including a displaceable weight movable about an axis transverse to said axis of rotation

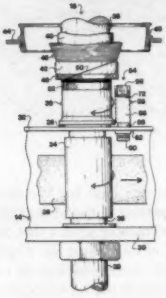
of the spool carrier and into a position to dispose the center of gravity of said spool carrier on said axis of rotation thereby to preclude turning movement of the spool carrier without stopping thereof, and to assure elimination of danger of damage in the event of turning movement of the spool carrier.

4,208,865

METHOD AND MEANS FOR CLEARING YARN UNDERWINDINGS FROM TEXTILE SPINDLE ASSEMBLIES

Ernest Koella, III, Rockford, Tenn., assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,551
Int. Cl.[2] D01H *9/16*
U.S. Cl. 57—303 **24 Claims**



1. In combination with a textile machine including at least one spindle rotatable about a substantially vertical axis and having lower and upper portions upon which yarn underwindings and a yarn package are respectively formed, said yarn underwindings and said yarn package being connected during package-building operation of said machine by an innerconnecting length of yarn rotatable with said spindle assembly about a path of rotary travel generally concentric with said axis of rotation of said spindle assembly; improved clearer means for, when actuated during regular package-building operation of said machine, effecting clearance of said yarn underwindings from said spindle assembly, said clearer means comprising:

a clearer unit carried by said textile machine in adjacent relationship to said spindle assembly; said clearer unit including yarn separating means movable from an inoperative position to an operative position wherein said yarn separating means intersects the path of rotary travel of said innerconnecting length of yarn about said axis of rotation of said spindle assembly; and vane-like actuator means operatively associated with said yarn separating means for moving said yarn separating means to said operative position thereof in response to the impingement of air blasts upon said actuator means.

4,208,866

ELECTRONIC TIMEPIECE EQUIPPED WITH ALARM

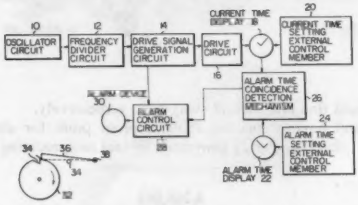
Heihachiro Ebihara, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1978, Ser. No. 921,954
Claims priority, application Japan, Jul. 8, 1977, 52-81805
Int. Cl.[2] G04C *21/16, 21/00;* **G04B** *23/12*
U.S. Cl. 368—251 **8 Claims**

1. An electronic timepiece having a source of a standard frequency signal, frequency divider means for dividing a frequency of said standard frequency signal to produce a standard frequency time signal, analog type current time indication means driven by said standard time signal for indicating current time, analog type alarm time indication means for indicating an alarm time, and external operating means coupled to said alarm time indication means for setting said alarm time, comprising:

alarm time coincidence detection means coupled to said current time display means and to said alarm time indication means for detecting coincidence between the hours and minutes of said current time and the hours and minutes of said alarm time and for generating an alarm time coincidence signal when such coincidence is detected;

zero seconds detection means coupled to said current time display means for detecting when the seconds of current time become zero and for producing a zero seconds detection signal when said seconds of current time become zero;



alarm control circuit means responsive to said alarm time coincidence signal and said zero seconds detection signal for producing an alarm drive signal; and

alarm generation means responsive to said alarm drive signal for generating an alarm drive signal;

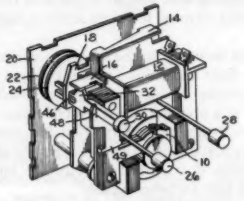
said alarm time coincidence detection means including a first set of switch contacts for detection of alarm time hours coincidence and a second set of switch contacts for detection of alarm time minutes coincidence, said first set of switch contacts being closed when alarm time hours coincidence occurs and said second set of switch contacts being closed when alarm time minutes coincidence occurs, and wherein said zero seconds detection means includes a third set of switch contacts, said third set of switch contacts being closed when zero seconds of said current time occurs.

4,208,867

TIMING DEVICE

Samuel Polonsky, Monroe, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 17, 1978, Ser. No. 934,356
Int. Cl.[2] G04B *23/02*
U.S. Cl. 368—262 **5 Claims**



1. In an alarm clock having an alarm vibrator arm and a reciprocating vibrator shut-off lever with an alarm "on" position out of engagement with said arm and an "off" position in engagement with said arm, gear means continuously rotated as a function of time cooperating with first and second coaxially spaced and movable cam members which are rotatably adjustable relative to each other to set the alarm, and said vibrator arm exerting a biasing force urging the second cam into engagement with the first through a pivoted bell crank between the arm and second cam, the crank having a pivot pin mount

on a base plate with an enclosed slot with an upper edge for guiding a free end of said shut-off lever, an improvement in said lever comprising,

an integral molded plastic planar member having upper and lower edges and having a pair of co-planar upper and lower cantilever arms having outer surfaces and extending from a bight to form said free end and disposed adjacent and coextensive with each other,

said arms being resiliently deformable toward each other in said plane and disposed in said slot for guidance along said outer surfaces,

a bevel section on the upper arm at the end thereof,

said pivot pin extending below said slot upper edge to form a cooperating detent with said bevel in lever "on" position, and

stop means disposed along the lower planar member edge limiting reciprocation at the "on" and "off" positions.

4,208,868

CONTROL DEVICE FOR A STEP-BY-STEP MOTOR

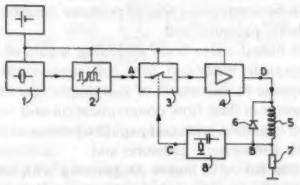
Danielle Regnier, and Claude Oudet, both of Besancon, France, assignors to Portescap, La-Chaux-de-Fonds, Switzerland

Filed Sep. 5, 1973, Ser. No. 394,473

Claims priority, application Switzerland, Sep. 20, 1972, 13723/72

Int. Cl.[2] **H04K** *19/24;* **G04C** *3/00;* **H02K** *37/00*

U.S. Cl. 368—62 **12 Claims**



1. A control device for a monophase rotary step-by-step motor for supplying electric driving pulses to the winding of the motor, said control device comprising means for generating a sequence of driving pulses on the order of milliseconds in duration and further comprising detection means for detecting the variation of the current passing through the motor winding during each driving pulse, said detection means including means for interrupting the driving pulse when a first relative minimum appears in the current passing through the winding.

4,208,869

ILLUMINATION DEVICE FOR ELECTRONIC TIMEPIECE

Tadashi Hanaoka, Koganei, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,432

Claims priority, application Japan, Jul. 31, 1976, 51/91810; Jul. 31, 1976, 51/91811; Aug. 24, 1976, 51/101017; Aug. 24, 1976, 51/101018; Sep. 3, 1976, 51/104991; Sep. 25, 1976, 51/115054; Mar. 3, 1977, 52/022200; Mar. 8, 1977, 52/024420

Int. Cl.[2] **G04B** *19/30*

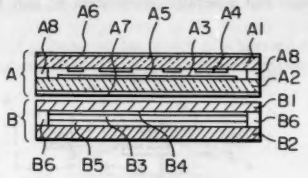
U.S. Cl. 368—84 **19 Claims**

1. In an electro-luminescent device in which an alternating electric field is impressed upon an electro-luminescent material thereby to render it light emissive, the improvement comprising:

a transparent 1st electrode plate disposed at the upper surface of the electro-luminescent material;

a 2nd electrode plate disposed at the lower surface of the electro-luminescent material, and

a 3rd electrode plate disposed opposite the 2nd electrode plate through the intermediary of an insulator, the 1st and 3rd electrode plates being electrically connected to serve



as one electrode of a pair, the 2nd electrode plate serving as the outer electrode of the pair.

4,208,870

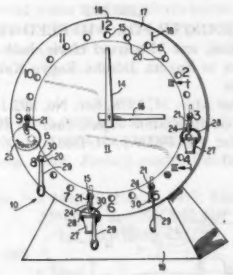
CLOCK-ORIENTED VISUAL REMINDER AND METHOD

Edward N. Cullom, 611 Mabry Rd., Atlanta, Ga. 30328

Filed Jul. 17, 1978, Ser. No. 925,277

Int. Cl.[2] **G04B** *19/06*

U.S. Cl. 368—41 R **8 Claims**



1. In combination with a clock having a face provided about its perimeter with an annular area carrying an annular series of fixed time indicators, and time indexing sweep hand means regularly sweeping along the inner diameter of said annular area:

upwardly opening hook means and means for mounting said hook means on said annular area selectively at said time indicators;

and means replaceably supported on said hook means and liable to extend inwardly beyond said inner diameter;

said hook means projecting sufficiently outwardly relative to the sweep path of said sweep hand means to support said replaceably supported means in clearance relation to said clock face and said sweep path to permit free sweeping of said sweep hand means between said supported means and said clock face;

said replaceably supported means comprising a tag carried on said hook means.

4,208,871

FUEL CONTROL SYSTEM

James C. Riple, Jr., Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

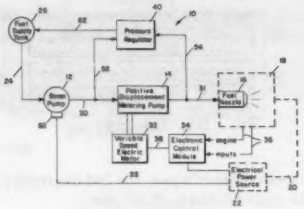
Filed Aug. 29, 1977, Ser. No. 828,716

Int. Cl.[2] **F02C** *9/10;* **F04B** *49/08*

U.S. Cl. 60—39.28 R **20 Claims**

1. A fuel control system for controllably supplying fuel from a fuel supply to a combustion engine, comprising first pump means for pumping liquid fuel from the supply at a pressure level at least equaling engine requirements; second pump

means for metering the liquid pumped by said first pump means, said second pump means being for supplying the metered fuel directly to the engine; means for variably driving said second pump means at a speed responsive to engine fuel requirements and generally independent of said first pump



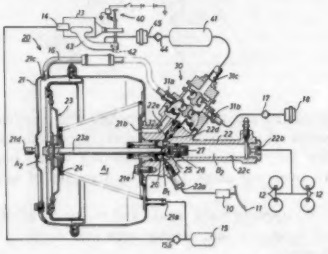
means; and pressure control means connected across said second pump means for limiting the pressure difference across said second pump means to a relatively low, substantially constant level, said pressure control means including means for bypassing from said second pump means a portion of the liquid pumped by said first pump means.

4,208,872

BRAKE BOOSTER FOR WHEELED VEHICLES

Hidetoshi Shimizu, and Mitsuyuki Horie, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 31, 1978, Ser. No. 892,156
Claims priority, application Japan, Jun. 25, 1977, 52-75889
Int. Cl.[2] **F01N** *5/04;* **B60T** *13/00*
U.S. Cl. 60—280 **2 Claims**



1. A brake booster for a wheeled vehicle having an engine including an exhaust braking system, a source of negative pressure, and a source of positive pressure, said brake booster acting in a hydraulic circuit connecting a master cylinder to wheel brake cylinders, comprising:

a housing provided at one side thereof with a cylinder body including a first bore for interposition within said hydraulic circuit and a second bore in communication with said first bore;

an operating piston being reciprocally disposed within said first bore for subdividing the interior of said first bore into first and second fluid chambers in fluid-flow communication with said master cylinder and said wheel brake cylinders, respectively, said operating piston including a check valve permitting fluid in said first fluid chamber to flow to said second fluid chamber when said operating piston is in a retracted position and preventing flow of fluid in said second fluid chamber to said first fluid chamber when said operating piston is translated from said retracted position;

a biased diaphragm piston reciprocally disposed within said housing and subdividing the interior of said housing into a negative pressure chamber and a variable pressure chamber, said negative pressure chamber being in fluid-flow communication with said source of negative pressure and said variable pressure chamber being selectively connected for fluid-flow communication with said negative pressure chamber, with said source of positive pressure and with atmospheric pressure, said diaphragm piston having a push rod extending into said first bore for translating said operating piston from said retracted position to increase hydraulic pressure of fluid trapped within said second fluid chamber on closing of said check valve;

a control piston movably disposed within said second bore of said cylinder body and being movably responsive to fluid pressure supplied by said master cylinder in to said second bore through said first fluid chamber of said first bore;

first control valve means cooperating with said control piston for connecting in fluid flow communication said variable pressure chamber to said negative pressure chamber under inoperative condition of said control piston and for connecting in fluid flow communication said variable pressure chamber with atmospheric pressure in response to movement of said control piston, said first control valve means comprising:

a biased diaphragm operatively connected to said control piston;

a first valve seat provided on said diaphragm for controlling fluid flow communication between said negative pressure chamber and said variable pressure chamber;

a second valve seat for controlling fluid flow communication between said variable pressure chamber and atmospheric pressure; and

a first biased valve body including a pair of valve parts engagable with said first and second valve seats in response to movement of said diaphragm to selectively connect in fluid flow communication said variable pressure chamber, with said negative pressure chamber, and with atmospheric pressure; and

second control valve means cooperating with said first control valve means for selectively connecting in fluid flow communication said variable pressure chamber with said source of positive pressure in response to displacement of said first control valve means, said second control valve means comprising:

a third valve seat for controlling fluid flow communication between said variable pressure chamber and said source of positive pressure; and

a second biased valve body including a valve part engagable with said third valve seat to sequentially connect in fluid-flow communication said variable pressure chamber with said source of positive pressure in response to operation of said first valve body.

4,208,873

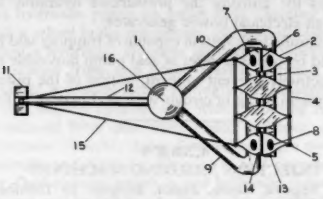
FLUID FLOW ENERGY EXTRACTING DEVICE OR WIND DAM

Vincent Foglia, 171 Hopkinson Ave., Piscataway, N.J. 08854

Filed Aug. 24, 1978, Ser. No. 936,481
Int. Cl.[2] **F03D** *3/00, 11/02*
U.S. Cl. 60—398 **6 Claims**

1. A device for extracting energy from gaseous or liquid fluid flows, comprising two or more foils, having openings on the foils outer surface to tap the low and/or high pressures created by the fluids passing around them; within each foil there is a partition to keep the pressures separated and each

chamber is vented to a manifold; the manifolds channel the pressures to a device which produces mechanical or electrical



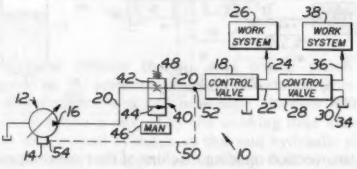
energy (which can be converted to any other energy form) utilizing the pressure differential which has been created.

4,208,874

APPARATUS FOR PRODUCING DIFFERENT FLOW RATES OF A FLUID

Jesse L. Field, Jr., Braidwood, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 28, 1978, Ser. No. 937,233
Int. Cl.[2] F15B *11/16*; F16H *39/46*
U.S. Cl. 60—420 **17 Claims**



1. Apparatus (**10**, **10B**) for producing different flow rates of fluid, comprising:

(a) a pump (**12**) having an output (**16**) and means (**14**) for changing the flow rate of the fluid at said pump output (**16**) in response to a first or a second control signal;

(b) first means ([**20,42,50**] or [**20,90,96**]), coupled to said pump output (**16**), for generating said first control signal, including a flow restrictor (**42** or **90**) for receiving fluid flow from said pump output (**16**) and for producing a pressure drop thereacross; and

(c) second means ([**20,40,44,46,50**] or [**22,88,92,96,102**]), selectively movable for overriding said first generating means ([**20,42,50**] or [**20,90,96**]), for generating said second control signal, including means ([**40,44,46**] or [**88,92,102**]) for decoupling said first signal generating means ([**20,42,50**] or [**20,90,96**]) from said pump output (**16**), said decoupling means ([**40,44,46**] or [**86,92,102**]) including

(i) a flow passage (**44** or **92**) being unrestricted in relation to said flow restrictor (**42** or **90**); and

(ii) means ([**40,46**] or [**88, 102**]) for replacing said flow restrictor (**42** or **90**) with said flow passage (**44** or **92**).

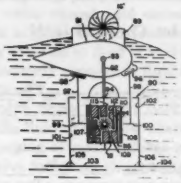
4,208,875

APPARATUS FOR OBTAINING USEFUL WORK FROM WAVE ENERGY

Junjiro Tsubota, 2392, Jindaiji-machi Chofu-shi, Tokyo 182, Japan

Division of Ser. No. 849,620, Nov. 8, 1977. This application Oct. 27, 1978, Ser. No. 955,417
Int. Cl.[2] F03B *13/12*
U.S. Cl. 60—495 **1 Claim**

1. Apparatus for obtaining useful work from or with waves, comprising: a buoyant body having an upper surface and a leading edge and a trailing edge, and constructed to float at the surface of a body of water with the upper surface of the buoyant body disposed beneath the surface of the body of water, said trailing edge being convex and curving sharply downward, said buoyant body having width and length dimensions selected such that the smaller of said dimensions is not substantially greater than approximately one half of the wave length, the movement of water particles in the waves being active upon the buoyant body in both directions of pitching motion to efficiently impart energy force to the buoyant body in both directions of pitching motion as well as in heaving motion; and mechanical means associated with the buoyant body and con-



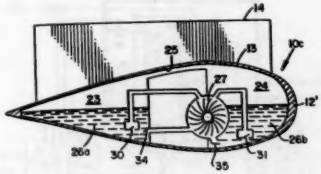
nected therewith to be driven by at least one of the heaving and pitching motions of the buoyant body, said mechanical means including a housing spaced from and supported by the buoyant body, said housing being divided into two chambers, water confined within said chambers, and said chambers being interconnected with one another through a water driven means for flow of water back and forth between the chambers through the water driven means upon pitching motion of the body to thus obtain useful work from the energy in the waves.

4,208,876

APPARATUS FOR OBTAINING USEFUL WORK FROM WAVE ENERGY

Junjiro Tsubota, 2392, Jindaiji-machi, Chofu-shi, Tokyo 182, Japan

Division of Ser. No. 849,620, Nov. 8, 1977. This application Oct. 27, 1978, Ser. No. 955,418
Int. Cl.[2] F03B *13/12*
U.S. Cl. 60—495 **10 Claims**



1. Apparatus for obtaining useful work from or with waves, comprising: a buoyant body having an upper surface and a leading edge and a trailing edge, and constructed to float at the surface of a body of water with the upper surface of the buoyant body disposed beneath the surface of the body of water, said trailing edge being convex and curving sharply downward, said buoyant body having width and length dimensions selected such that the smaller of said dimensions is not substantially greater than approximately one half of the wave length, the movement of water particles in the waves being active upon the buoyant body in both directions of pitching motion to efficiently impart energy force to the buoyant body in both directions of pitching motion as well as in heaving motion; and mechanical means inside the buoyant body and connected therewith to be driven by at least one of the heaving and pitching motions of the buoyant body, said mechanical means including two interconnected chambers having water therein, said water being directed from one chamber against a water

driven means and into the other chamber upon occurrence of said at least one movement.

4,208,877

DEVICE FOR EXTRACTING ENERGY FROM WAVES

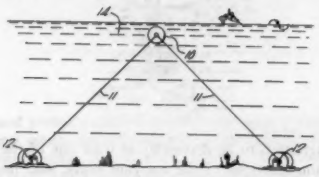
David V. Evans; John P. Davis, and Thomas L. Shaw, all of United Kingdom Atomic Energy Authority, 11 Charles II St., London, SW1, England

Filed Feb. 28, 1979, Ser. No. 16,024

Claims priority, application United Kingdom, Mar. 1, 1978, 8059/78

Int. Cl.² F03B *13/12*

U.S. Cl. 60—495 **12 Claims**



12. A method of extracting energy from the effect of waves on a liquid on a substantially circular cylinder having positive buoyancy in the liquid, the method comprising,

(a) holding the cylinder below the waves by a plurality of tie members attached to the cylinder, and

(b) performing useful work by means connected to at least some of the tie members from changes in the load on said some tie members as a result of motion of the cylinder in response to the waves.

4,208,878

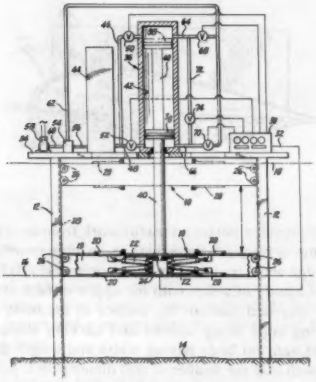
OCEAN TIDE ENERGY CONVERTER

Don E. Rainey, 4529 NE. 21st Ave., Fort Lauderdale, Fla. 33308

Filed Jul. 6, 1977, Ser. No. 813,325

Int. Cl.² F03B *13/12*

U.S. Cl. 60—496 **2 Claims**



1. A tidal motor comprising:

(a) a vertically moveable buoyant member in the form of a piston including an enclosed chamber;

(b) valve means providing selective communication between the chamber interior and its exterior;

(c) control means for said valve means;

(d) a positive displacement hydraulic pump and hydraulic fluid in circuit with the pump, the pump having a moveable element connected to the piston and arranged to utilize both upward and downward motion of said piston to drive the moveable element of the pump to pressurize said hydraulic fluid;

(e) means for utilizing the pressurized hydraulic fluid to drain an electrical power generator;

(f) an hydraulic lock system capable of trapping said hydraulic fluid on opposite sides of said pump moveable element to selectively prevent vertical motion of the piston, said lock system being in circuit with said hydraulic fluid.

4,208,879

INJECTION MOLDING MACHINES

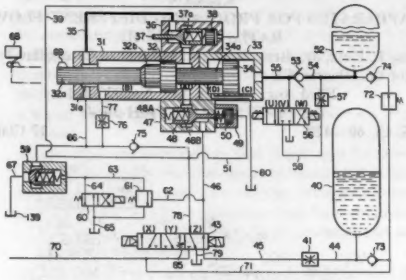
Kazuyoshi Segawa, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1978, Ser. No. 876,684

Claims priority, application Japan, Feb. 15, 1977, 52-15259

Int. Cl.² B60T *13/00*

U.S. Cl. 60—547 R **7 Claims**



1. In an injection molding machine of the type comprising an injection cylinder containing an injection piston, a feedback speed-up circuit connected in said injection cylinder on the opposite sides of said injection piston, a high speed shut-off valve connected in said circuit, a first source of pressurized liquid, a first valve means for admitting the pressurized liquid into said injection cylinder on one side of said injection piston, a booster cylinder connected to said injection cylinder on said one side for applying higher liquid pressure to said injection piston than the pressure in said first source of liquid pressure, said booster cylinder containing a booster piston including a larger diameter portion and a small diameter portion extending into said injection cylinder on said one side, the improvement which comprises a second source of pressurized liquid, and a second valve means connected between said second source of pressurized liquid and said booster cylinder, said second valve means comprising a direction transfer valve connected between said booster cylinder and said second source of pressurized liquid and a check valve connected in parallel with said transfer valve, said check valve opening to pass the pressurized liquid from said booster cylinder to said second source of pressurized liquid when said booster piston is moved backwardly, and said direction transfer valve operating to supply the pressurized liquid into said booster cylinder when said injection piston is moved forwardly.

4,208,880

HYDRAULIC BRAKE SYSTEM FOR VEHICLES

Mitsuyuki Horie, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 27, 1978, Ser. No. 881,696

Claims priority, application Japan, Jul. 15, 1977, 52-84053

Int. Cl.² B60T *13/20*

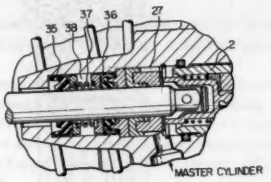
U.S. Cl. 60—556 **3 Claims**

1. A hydraulic brake system for vehicles comprising:

a brake master cylinder;

a separated-type hydraulic booster including a hydraulic

cylinder, a hydraulic piston sealingly and slidingly disposed in said hydraulic cylinder and defining in front of said hydraulic piston an outlet fluid chamber connected with a wheel brake mechanism and behind said hydraulic piston a hydraulic chamber into which working fluid is introduced from said brake master cylinder, a control cylinder, a control piston sealingly and slidingly disposed in said control cylinder into which working fluid is also introduced from said brake master cylinder, a casing, a pneumatic chamber defined in said casing, a power piston sealingly and slidingly disposed in said pneumatic chamber, fluid passage means in said hydraulic piston and connecting said hydraulic chamber and said outlet fluid chamber with each other, and control valve means in said fluid passage means and closable as a result of axial movement of said power piston, said power piston having a piston rod extending axially through said hydraulic chamber and connected with said hydraulic piston for limited axial



movement relative thereto, said power piston being moved by air pressure, which is introduced from an air pressure source into said pneumatic chamber when said control piston is moved by the working fluid introduced into said control cylinder, so that said hydraulic piston is moved so as to supply the working fluid in said outlet chamber into said wheel brake mechanism; and

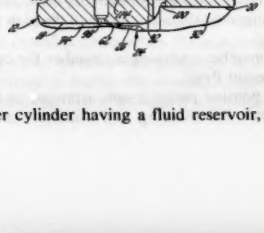
means for resiliently expanding the volume of said hydraulic chamber, said resiliently expanding means comprising a dust seal fixedly disposed in said hydraulic chamber on the side thereof adjacent the pneumatic chamber, an oil seal slidingly and sealingly disposed in said hydraulic chamber, an air pocket between said dust seal and said oil seal fluidically isolated from said outlet fluid chamber and biasing said dust seal and said oil seal away from each other, and a compression spring member in the air pocket between said dust seal and said oil seal, and the piston rod of the power piston extends through the dust seal and the oil seal and slidably engages both, the dust seal and the oil seal.

4,208,881

QUICK TAKE-UP MASTER CYLINDER

David L. Brademeyer, Dayton, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1978, Ser. No. 927,857
Int. Cl.[2] B60T *11/08*; F15B *7/04*
U.S. Cl. 60—578 **4 Claims**



1. In a master cylinder having a fluid reservoir, a stepped bore, and a mating stepped piston reciprocably received in said bore, said piston and said bore defining a large diameter low pressure high volume displacing first pressurizing chamber and a smaller diameter high pressure low volume displacing second pressurizing chamber, a compensation control and blow-off valve unit comprising:

a fluid flow sensitive first valve permitting fluid flow therepast from said reservoir to said first chamber and preventing fluid flow therepast in the reverse direction;

a second valve having yieldable means continually urging said second valve closed, said second valve having one side exposed to fluid in said reservoir and another side continuously exposed to fluid in said first chamber of said bore and selectively exposed to fluid in said second chamber of said bore;

said second valve being opened only at a predetermined pressure in the fluid in said first chamber exposed thereto against the urging of said yieldable means;

said second valve including an area exposed to fluid in said first chamber and responsive to a predetermined pressure differential between a higher fluid pressure generated in said first chamber during master cylinder actuation and the lower fluid pressure of said reservoir to open said second valve against the urging of said yieldable means to relieve pressure in said first chamber;

and a continuously open restricted flow passage bypassing said second valve between said reservoir and said first chamber and providing a controlled leak accommodating a delayed pressure equalization between said reservoir and said first chamber under a static pressure condition;

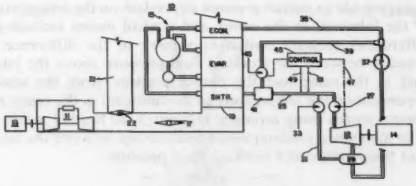
pressure generated in said first chamber during master cylinder actuation therefore being limited so that the master cylinder actuating force is not required to overcome the pressure generated in said first chamber.

4,208,882

START-UP ATTEMPERATOR

William F. Lopes, North Reading, and William G. Carberg, Georgetown, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1977, Ser. No. 860,721
Int. Cl.[2] F01K *7/34*
U.S. Cl. 60—653 **3 Claims**



1. A control system for regulating steam temperature in a desuperheating station upstream from a prime mover wherein said desuperheating station includes an attemperator device, valve means for regulating coolant flow to the attemperator and valve positioning means; said control system comprising:

redundant temperature sensing means providing first and second temperature signals into a preset difference comparator;

alarm means connected to the output of said preset difference comparator to indicate signal invalidity whenever the first and second temperature signals differ by a preset signal difference;

select largest logic connected to said first and second temperature signals to provide a feedback temperature signal indicative of the highest steam temperature downstream from said attemperator;

reference signal generating means including fixed setpoint logic having a status input from said prime mover indicat-

ing at least a cold or warm condition and ramp setpoint logic including a rate increase circuit whereby control is extended beyond said fixed setpoint logic and a reference temperature signal is generated; and,

a valve control module including a summing junction for determining the difference between said feedback temperature signal and said reference temperature signal; the output of said valve control being a valve positioning signal input to said valve positioning means.

4,208,883

COMPRESSORS FOR HEAT PUMPS

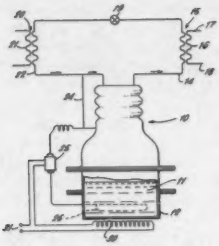
Robert Stirling, Gayton, England, assignor to The Electricity Council, London, England

Filed May 30, 1978, Ser. No. 910,993

Claims priority, application United Kingdom, Jul. 18, 1977, 30130/77

Int. Cl.² F25B *43/02*

U.S. Cl. 62—192 **2 Claims**



1. In a compressor for a heat pump employing a condensible gas as a working fluid and having lubricated moving parts exposed to the working fluid, with a sump into which the lubricant drains, the lubricant in the sump being exposed to the working fluid, the improvement comprising an electrical heating element in or adjacent the sump and arranged for heating the lubricant, a sensor including a sensor bulb containing a quantity of said lubricant and of said working fluid, the proportion of working fluid dissolved in the lubricant in the bulb being that corresponding to maximum viscosity of the solution, the sensor bulb being immersed in the lubricant in the sump so as to provide an output pressure dependent on the temperature of the lubricant in the sump, and control means including a differential pressure switch responsive to the difference in pressure between the working fluid pressure above the lubricant in the sump and the output pressure from the sensor dependent on the temperature of the lubricant in the sump, the control means being arranged to control the heating means so as to maintain a predetermined relationship between the lubricant temperature and working fluid pressure.

4,208,884

AIR DEFROST HOUSING

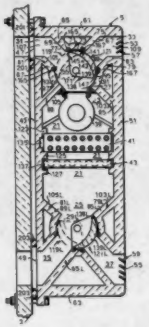
Edward V. Popham, 1334 Lake Asher Cir., Apopka, Fla. 32703

Filed Apr. 24, 1978, Ser. No. 899,256

Int. Cl.² F25D *21/10*

U.S. Cl. 62—282 **2 Claims**

1. In a refrigeration system having an evaporator, a mechanism for defrosting the evaporator, a housing for the evaporator and mechanism which is adapted for mounting on an exterior wall of a refrigerator compartment, and a circulating fan for circulating air through the evaporator and compartment, the improvement wherein said housing comprises a preformed unitary body section comprising a rear wall which is adapted to facially confront the exterior wall of the refrigerator compartment, a front wall which is spaced apart from said rear wall, and a pair of opposite side walls that are spaced apart and formed integral with the front and rear walls, said body section having a chamber with upper and lower ends and which is centrally located between the front and rear walls and open to the exterior of the body section between said upper and lower ends at each of said opposite side walls, a pair of cylindrical valve chambers between said front and rear walls and which are respectively located above and below said centrally located chamber and communicate therewith at said upper and lower ends respectively, a first pair of passages that communicate with the respective valve chambers and with the exterior of the body section at said front wall, a second pair of passages that communicate with the respective valve chambers and with the exterior of the body section at said back wall, said evaporator being supported by the body section within said centrally located chamber and being adapted for withdrawal from said centrally located chamber to the exterior of the body section through the opening in one of said opposite side walls,



said fan being mounted on the body section and being located and arranged within and at the upper end of said centrally located chamber for withdrawing air from the centrally located chamber and delivering it to the valve chamber thereabove, said fan being adapted for withdrawal from said centrally located chamber to the exterior of the body section through the opening in said one of said opposite side walls, said mechanism comprising a pair of arcuate valve members that are arranged in the respective valve chambers to close the respective passages of said first pair, said arcuate valve members being rotatably movable in the respective valve chambers to open the respective passages of said first pair and simultaneously close the respective passages of said second pair, means linking said arcuate members in movement, and means drivingly connected to the linking means and actuatable to simultaneously rotatably move said arcuate members.

4,208,885

EXPANDER-COMPRESSOR TRANSDUCER

Lawrence J. Schmerzler, 539 Laurel Pl., South Orange, N.J. 07079

Continuation of Ser. No. 417,958, Nov. 2, 1973, Pat. No. 4,094,169, which is a continuation-in-part of Ser. No. 59,306, Jul. 29, 1970, abandoned. This application Jun. 12, 1978, Ser. No. 914,883

Int. Cl.² F25D *9/00*

U.S. Cl. 62—403 **6 Claims**

1. An expander-compressor transducer for expanding refrigerant fluid from a high pressure source into a low pressure heat absorbing heat exchanger while simultaneously precompressing the same fluid stream derived from the low pressure heat absorbing heat exchanger for delivery through suitable conduit heat exchangers to the suction side of the high pressure source, comprising

a body member enclosing a chamber for confinement of a refrigerant fluid,

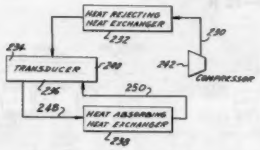
fluid responsive piston means arranged to oscillate in said chamber and dividing said chamber into an expansion

chamber at one end and a compression chamber at the other end,

return spring control means in said compression chamber for locating said piston means into initial start-up position,

fluid control regulating means for permitting flow of refrigerant fluid into and out of said expansion chamber and into said compression chamber, and

check valve means for permitting refrigerant to flow out of



said compression chamber to ambient whenever the pressure in said compression chamber is higher than ambient pressure,

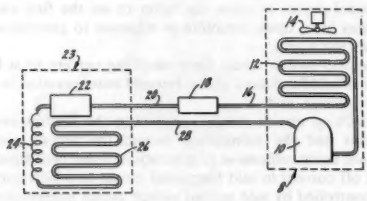
thereby effecting oscillatory movement of said fluid responsive piston means within said chamber, causing concurrently the refrigerant fluid stream to expand in said expansion chamber and to compress in said compression chamber, and producing simultaneously a cooling effect and a work output.

4,208,886

SUBCOOLING VALVE FOR SPLIT SYSTEM AIR CONDITIONING APPARATUS WITH REMOTE CONDENSING UNIT

Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 4, 1978, Ser. No. 966,428
Int. Cl.² F25B 1/00
U.S. Cl. 62—498 **4 Claims**



1. In an air conditioning apparatus of the type including a compressor, a condenser, an evaporator, and conduit means for connecting the compressor, condenser and evaporator to form a closed system for refrigerant fluid flow, the improvement comprising:

a capillary tube connected between said condenser and said evaporator; and

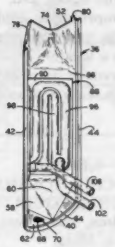
valve means being connected between said condenser and said capillary tube for creating a pressure drop ahead of said capillary tube and for effecting subcooling of refrigerant leaving the condenser, said valve means including a valve member resiliently biased toward a closed position against the direction of fluid flow, said valve member being in the closed position when the compressor is shut down, said valve member being opened in the normal operating condition during the on-cycle when the compressor is running so as to produce the pressure drop.

4,208,887

SUCTION ACCUMULATOR HAVING HEAT EXCHANGER

Robert L. Morse, Adrian, Mich., and Sharon J. Hudson, Jr., Toledo, Ohio, assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Jan. 22, 1979, Ser. No. 5,140
Int. Cl.² F25B 43/00
U.S. Cl. 62—503 **15 Claims**



1. In a refrigeration system suction accumulator including a storage vessel having a refrigerant inlet, and means defining a first fluid passageway in the vessel having an inlet in communication with the interior of the vessel and an outlet extending out of the vessel, said means defining a fluid passageway having an outer surface within the vessel, jacket means disposed over at least a portion of said surface and being spaced therefrom so as to form a second fluid passageway between said jacket and said surface, said second passageway being sealed from said first passageway and from the interior of said vessel and having an inlet and an outlet located exteriorly of said vessel.

4,208,888

JEWELRY STORING AND DISPLAYING NATURAL PLACER GOLD

Ann L. Erdman, 13 Gordon Way, Princeton, N.J. 08540, and James W. Shue, Harbourton Mt. Airy Rd., West Amwell, N.J. 08530

Filed Jul. 7, 1978, Ser. No. 922,775
Int. Cl.² A44C 25/00
U.S. Cl. 63—2 **2 Claims**

1. A display apparatus for storing placer gold particles, said apparatus comprising:

a plurality of placer gold particles in their natural unrefined state;

a substantially clear vessel of hand blown glass having an exterior shape suggestive of a thermometer and including a first cylindrical section having temperature markings thereon and a second bulb section connected to said first cylindrical section;

a cavity in said vessel for receiving said gold particles, said cavity extending from the exterior of said vessel towards the interior of said vessel so that the cavity extends uni-

formly through said first cylindrical section and expands to a rounded shape inside of the second bulb section, said placer gold particles filling approximately 50% of the volume of said cavity;

a cap means comprised of a metal alloy and connected to said vessel for capping said cavity;

a loop forming part of said cap means and passing from one side of said cap means to the other on a twisted path in a configuration adapted to coact with a suspending chain to stabilize motion of the vessel; and,

a necklace means comprising a gold chain which passes through said loop in said cap means for attaching the display apparatus to a wearer,

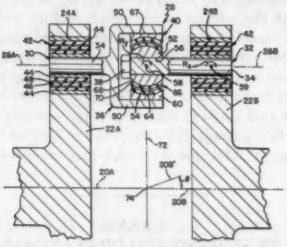
wherein said vessel serves to store said placer gold particles and said second bulb section of said vessel magnifies the particles.

4,208,889

CONSTANT VELOCITY, TORSIONALLY RIGID, FLEXIBLE COUPLING

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Aug. 30, 1978, Ser. No. 937,919
Int. Cl.[2] F16D *3/48*
U.S. Cl. 64—10 **24 Claims**



1. A flexible coupling having a central axis of rotation; said coupling comprising:

first and second torque transmitting members capable of being mounted for rotation about said central axis;

a plurality of connecting members, each having first and second opposite ends and being associated in pairs for connecting said first torque transmitting member to said second torque transmitting member;

spherical elastomeric bearing means for connecting the first ends of each pair of said connecting members together; and

second elastomeric bearing means for connecting the second ends of each pair to said first and second torque transmitting members, respectively, so that each pair of connecting members is radially spaced from said central axis and circumferentially spaced from the other pairs of connecting members; and said spherical elastomeric bearing means and said second elastomeric bearing means associated with each said pair are all circumferentially aligned along a common axes with regard to one another about said central axis;

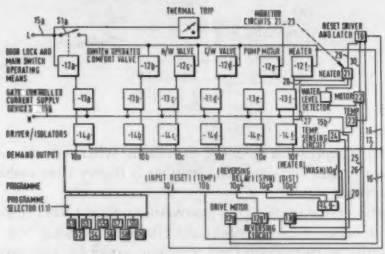
wherein said spherical elastomeric bearing means (1) carries compressive loads when torque is applied to one of said torque transmitting members about said central axis, and (2) provides shearing relief and restoring forces responsively to all angular motion when at least one of said torque transmitting members is misaligned from said central axis; and said second elastomeric bearing means (1) carries compressive loads when torque is applied to one of said torque transmitting members about said central axis and (2) provides shearing relief and restoring forces in response to all translational motion when at least one of said torque transmitting members is misaligned from said central axis.

4,208,890

CONTROL CIRCUITS IN OR FOR WASHING, DRYING AND THE LIKE MACHINES OR OTHER APPARATUS

Raymond F. Wood, Stafford, England, assignor to Servis Domestic Appliances Limited, Wednesbury, England

Filed Sep. 26, 1977, Ser. No. 836,720
Int. Cl.[2] D06F *33/02*
U.S. Cl. 68—12 R **8 Claims**



1. A control circuit for controlling the supply of current from a source to an apparatus which includes a plurality of functional means required to be brought into operation in a sequence in accordance with at least one predetermined programme, such circuit comprising:

a. a first switch means controlling the supply of current to at least some of said functional means,

b. a main control means for furnishing signals to control operation of said functional means in accordance with said programme and to set the first switch means in a closed or open position in accordance with demand requirements of said programme applicable to the apparatus,

c. at least one monitoring means each associated with a respective one of the functional means for generating a fault signal in response to occurrence of a fault condition,

d. means connecting the monitoring means with the main control means to cause the latter to set the first switch means in an open condition in response to generation of said fault signal,

e. a second switch means for controlling current to at least one of said functional means brought into operation in said programme, and

f. a back-up circuit means connecting the second switch means and the monitoring means, the second switch means being responsive to generation of said fault signal to cut off current to said functional means to which current is controlled by said second switch means irrespective of response of the main control means to said fault signal.

4,208,891

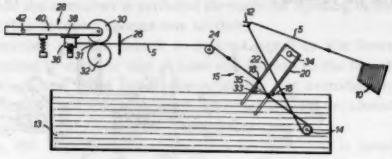
APPLICATION OF LIQUID TO YARNS

Ian B. Angliss, Belmont, Australia, assignor to Commonwealth Scientific and Industrial Research, Campbell, Australia

Filed Nov. 15, 1978, Ser. No. 961,070
Claims priority, application Australia, Nov. 25, 1977, 2565/77
Int. Cl.[2] D06B *3/06, 15/08*
U.S. Cl. 68—19 **2 Claims**

1. An apparatus for controlling liquid application to a yarn comprising applicator means for applying liquid in excess to a yarn including a receptacle for holding a supply of liquid and guide means for guiding a yarn through a liquid in said receptacle and means for removing excess liquid from said yarn including a pair of flat parallel spaced apart plates secured together, pivot means adjustably supporting said plates, as an assembly above said receptacle at selected angles relative to

the surface of a liquid in said receptacle, a yarn guide edge on each plate with one of said guide edges being offset from the other of said guide edges so that the path of travel of said yarn as it is guided from a liquid in said receptacle by said guide means changes direction as the yarn passes from said one of



said guide edges to the other of said guide edges and a portion of the plate having said other of said guide edges overlying said one of said guide edges to catch the liquid thrown from the yarn as it changes direction and to guide said liquid back to said receptacle.

4,208,892

SAMMIER PRESS

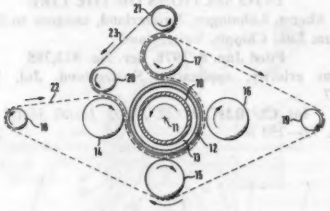
Arnold Becker, Murrhardt, Fed. Rep. of Germany, assignor to Louis Schweizer GmbH & Co. KG, Lederfabrik, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,213

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757257

Int. Cl.[2] C14B *1/30, 1/06*

U.S. Cl. 69—48 **23 Claims**



1. Sammier press, especially for leather and fur, with a pressure roll and counterpressure rolls bearing thereon, whereof at least one of said rolls is driven, and with two conveyor belts that are moved by frictional engagement, said belts being operable to receive the material that is to be expressed between them and draw it through pressure zones formed between the pressure roll and the counterpressure rolls, characterized in that:

(a) the pressure roll is comprised by a tube surrounded by an elastic hose which together form a pressure cushion,

(b) three or more counterpressure rolls are symmetrically distributed about the periphery of the pressure roll, and

(c) wherein one of said conveyor belts is disposed about said pressure roll and the other of said conveyor belts is disposed, in part, in facing relationship to said one conveyor belt, at least the other conveyor belt comprising a water-permeable material in the region of the pressure roll.

4,208,893

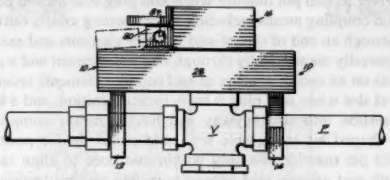
ANTI-TAMPERING DEVICE FOR VALVE STEMS

Joseph Avrich, 285 NE. 191 St., #2924, North Miami Beach, Fla. 33179; Arthur C. Ripley, Rte. #1, Box #5, Astor, Fla. 32002, and Robert Ould, 16980 NE. 1 Ave., North Miami Beach, Fla. 33162

Filed Apr. 26, 1978, Ser. No. 900,093

Int. Cl.[2] F16K *35/00*

U.S. Cl. 70—178 **7 Claims**



1. For protectively housing a valve stem operator connected to a pipe, a device with a padlock comprising:

a skirted keeper body having a main aperature and including:

(a) a pair of spaced hooked legs for hooked up engagement with the pipe, on either side of the valve stem in depending relation to the body,

(b) an upstanding member having a first padlock aperture,

(c) means connecting the legs to the body, and

(d) axially adjustable singular lift means having a first end, the lift means aligned with the main aperture thereby when the skirted body is placed over the valve stem, the lift means first end bears against the valve stem and axially adjusting the lift means causes the body to be raised or lowered, in relation to the valve stem, and

a cap including a first padlock end having a second padlock aperture aligned with the first padlock aperature when the cap is in overlaying relation to the body, and a second end, and said cap including means for removably connecting the cap to the body, thereby when the cap is in overlaying relation to the body main aperture, the valve stem is encased and the padlock holes aligned, and the padlock may be inserted through the first and second aligned padlock apertures for locked engagement of the cap and the body for protectively housing the valve stem and for preventing manipulation.

4,208,894

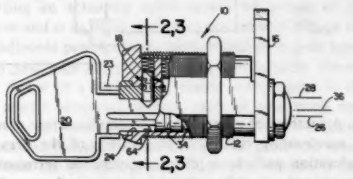
CAM LOCK

Walter E. Surko, Jr., Southington, Conn., assignor to Emhart Industries, Inc., Hartford, Conn.

Filed Sep. 1, 1978, Ser. No. 939,059

Int. Cl.[2] E05B *27/04*

U.S. Cl. 70—364 A **10 Claims**



1. In a cam lock having a generally cylindrical shell, a plug supported for rotation in said shell about an axis of rotation offset from and parallel to the axis of said shell and along a shear line between locked and unlocked positions, said plug having a keyway therein and an annular groove opening radially outwardly through its peripheral surface, said plug and said shell having holes therein coaxially aligned in locked

position and cooperating in locked position to define a bore opening into said groove and communicating with said keyway, an axially elongated cylindrical tumber assembly coaxially supported in said bore and having a plurality of tumbler elements including a pin tumbler carried by said plug and a driver carried by said shell, said pin tumbler having a generally V-shaped chisel tip at one end exposed within said keyway, said pin tumbler assembly having means for coupling said driver to said pin tumbler when said plug is in locked position, said coupling means including a slot opening axially outwardly through an end of one of said tumbler elements and extending generally diametrically through said one element and a projection on an end of another of said tumbler elements received in said slot when said plug is in its locked position, and a key for insertion into said keyway and having means comprising a V-shaped bit engageable with said chisel tip for positioning said pin tumbler assembly within said bore to align said slot with said groove, said groove receiving said projection when said plug is rotated from its locked position relative to said shell, the improvement comprising said annular groove having its axis radially offset from said axis of rotation and parallel thereto.

4,208,895

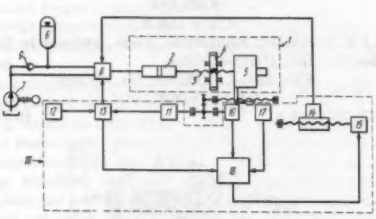
METHOD AND APPARATUS FOR CONTROLLING A HYDRAULIC SCREW PRESS

Anatoly S. Grigorenko, ulitsa Tovstukho, 1, kv. 21; Jury A. Moroz, ulitsa Fugenfirova, 3, kv. 91, both of Omsk; Jury A. Bocharov, 15 Parkovaya ulitsa, 18, korpus 1, kv. 109; Anatoly V. Safonov, Sevastopolsky prospekt, 51, korpus 1, kv. 11, both of Moscow; Vladimir V. Landyshev, ulitsa 50 let VLKSM, 14a, kv. 22, Omsk; Gennady A. Vasiliev, ulitsa Olimpiiskaya, 6, kv. 8, Omsk; Lidia A. Sakharova, ulitsa P. Osminina, 6, kv. 7, Omsk, and Nikolai A. Stolyarov, ulitsa 27-yalinia, 16a, kv. 67, Omsk, all of U.S.S.R.

Filed Jul. 25, 1978, Ser. No. 927,877

Int. Cl.[2] B21J *9/20*

U.S. Cl. 72—8 **12 Claims**



1. A method of controlling a hydraulic screw press, including accelerating the movable portions of the press over an acceleration path to a preset acceleration terminating point whereat said movable portions have attained a speed sufficient for providing the required energy of impact upon a workpiece; while thus accelerating, measuring the speed of said movable parts and determining the value of deviation of the point of attaining the preset speed from the preset acceleration terminating point, and using the value thus obtained to vary at least one of the parameters defining the motion of said movable portions, so that the predetermined speed should be attained at the point of delivering an impact upon the workpiece.

4,208,896

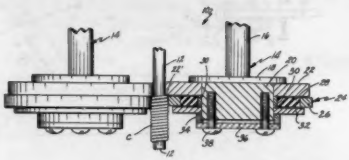
WIRE COILING APPARATUS

Stephen A. Platt, Grand Haven, Mich., assignor to S. A. Platt, Inc., Grand Haven, Mich.

Filed Jan. 29, 1979, Ser. No. 7,158

Int. Cl.[2] B21F *3/04*

U.S. Cl. 72—142 **14 Claims**



1. A wire coiling apparatus comprising:

a pair of coiling rolls astraddle a rotational mandrel and spindle therefor and having rotational axes; each said coiling roll comprising (a) a rigid drive disc with a spindle engaging periphery for direct driving of both drive discs by said spindle, and (b) a work ring operably coupled to said rigid drive disc and resiliently transversely floatable relative to said rotational axis, under coil forming pressure, and including a coil forming peripheral surface; means biasing said coiling rolls toward said mandrel and spindle for pressing said drive discs into engagement with said spindle and pressing said work rings into engagement with opposite sides of a wire coil being formed on said mandrel, causing resilient transverse deformation of said work rings relative to the rotational axis thereof in a transverse floating action, said deformation exposing axially facing, rigid backup shoulders of said drive discs at said mandrel to axially retain the forming coil against back flow.

4,208,897

PROCESS AND EQUIPMENT FOR THE COMMERCIAL INDIRECT EXTRUSION OF LONG LENGTHS OF METAL, IN PARTICULAR LONG AS-CAST BILLETS INTO SECTIONS OR THE LIKE

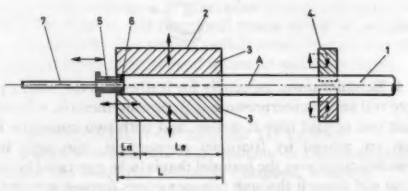
Rudolf Akeret, Löhningen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 8, 1978, Ser. No. 913,798

Claims priority, application Switzerland, Jul. 12, 1977, 8568/77

Int. Cl.[2] B21C *23/32, 27/00, 33/00, 35/04*

U.S. Cl. 72—253 R **24 Claims**



1. A process for the extrusion of billets into sections or the like with the help of a container and an extrusion die, which comprises:

dividing the container in contact with the billet to be extruded into at least two segments which can be opened and closed radially to the long axis (A) of the container and the billet wherein said container when closed clamps that part of the billet of length (La) to be extruded at least up to the die area;

providing on opening said segments a relative movement in the direction along said axis (A) between the billet and the

container, as a result of which the container is filled by the billet essentially over its whole length (L);

producing after closing said segments a relative movement between a die mounted on a hollow stem and the closed container, whereby said die is forced into the billet inside the container so that said part of the billet of length (La) inside the container is extruded through the opening in the die thus forming at least one section;

transmitting a force which is at least equal to the force required to extrude said at least one section to the length (Le) of said billet inside the container not extruded by means of the friction between the inner wall of the closed container and the surface of the billet;

filling the container by applying a force which is small compared with the extrusion force and which is borne by a part of the billet projecting out of the container; and

opening said segments at the end of an extrusion sequence, whereupon a relative movement between the container and the die returns them to their starting position and a relative movement between the container and the billet of distance (La) fills the container again, so that after closing said segments a new length (La) of said billet can be extruded.

4,208,898

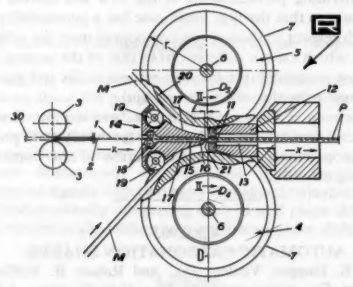
PROCESS AND DEVICE FOR EXTRUDING A PLURALITY OF COMPOSITE SECTIONS

Adolf Ames, Hilzingen; Alfred Wagner, Steisslingen, and Ulrich Zillmann, Mühlhausen, all of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 874,069, Feb. 1, 1978, abandoned. This application Jun. 13, 1979, Ser. No. 48,181

Int. Cl.[2] B21C *23/24, 23/22, 33/00, 23/01*

U.S. Cl. 72—258 **16 Claims**



1. A process for the continuous extrusion of a plurality of composite metal sections, each composite metal section comprising a beam-like metal section and at least one insert of shaped strip of another metal which forms at least part of the surface of the beam-like section, the beam-like section of said composite is produced by extruding a billet through a shape-giving opening in an extrusion die, wherein at least two composite metal sections are produced simultaneously, and the shaped strips are fed pairwise between opposite lying parts of opposing beam-like metal sections to be provided with said strip, wherein a plurality of billets for producing said beam-like metal sections are fed continuously on both sides of the strips to the extrusion die on moving surfaces.

4,208,899

PRESS FOR PRODUCING MACHINE ELEMENTS, ESPECIALLY BALLS, RIVETS AND THE LIKE

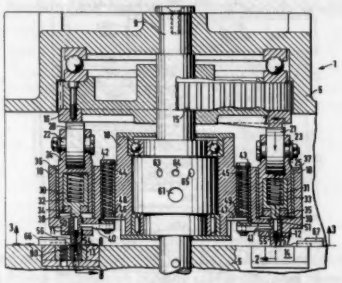
Wilhelm Pieper, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Hilgeland, Wuppertal, Fed. Rep. of Germany

Filed Nov. 29, 1977, Ser. No. 855,954

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653040

Int. Cl.[2] B21D *45/00*

U.S. Cl. 72—344 **15 Claims**



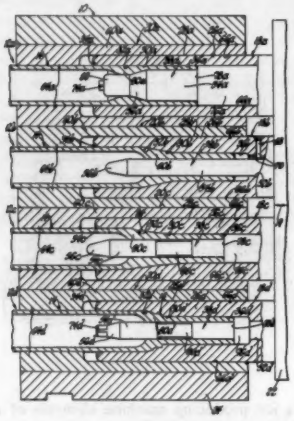
1. A press for producing machine elements of relatively small dimensions, especially balls and rivets, from wire sections, in which wire sections are transported to a stationary matrix, said press including in combination: a machine frame, a tool carrier stationarily arranged in said machine frame, matrix receiving means associated with said machine frame for receiving at least one matrix, a rotatable cam disc, driving means arranged in said machine frame for rotating said cam disc, actuating roller means operable by said cam disc, and reciprocable punch means axially movably guided by said tool carrier for cooperation with a matrix in said matrix receiving means, said punch means being drivingly operable by said cam disc through the engaging intervention of said actuating roller means, intermediate members operable to effect a rectilinear power transmission and said cam disc being cup wheel shaped and said actuating roller means being drivingly connected through said intermediate members with the pertaining punch means, a plurality of push rods corresponding in number to the number of said actuating roller means, and each of said actuating roller means being respectively rotatable about a pin supported by the respective push rod and having its axis of rotation extend in a direction transverse to the axis of rotation of said cup wheel shaped cam disc, each of said push rods at one end supporting an actuating roller means by means of the pertaining pin and at its other end being operable to engage the respective adjacent punch means, each of said push rods being arranged in said tool carrier and being displaceable therein against the thrust of a spring and axially with regard to the pertaining matrix receiving means, each of said push rods having a cavity with an opening in alignment with the adjacent punch means and located on that side of said push rod which is remote from the pertaining actuating roller means, a cup-shaped sleeve member reciprocable in said cavity and open at that end which is adjacent the pertaining actuating roller means and closed at the opposite end with the exception of a passage therethrough, and spring means arranged in said cavity and continuously urging said sleeve member in the direction toward the respective adjacent matrix receiving means, said sleeve member being provided with an extension extending through said last mentioned passage into operative engagement with the pertaining punch.

4,208,900

AXLE SPINDLE FORMING APPARATUS

Joseph H. Zawacki, Detroit, and John P. Dutton, Dearborn Heights, both of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.

Division of Ser. No. 773,456, Mar. 2, 1977, Pat. No. 4,100,781.
This application Mar. 6, 1978, Ser. No. 883,776
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—354 8 Claims



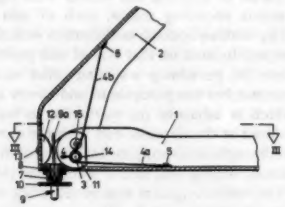
1. Apparatus for forming a round axle spindle comprising a hollow punch including a metallic body having an annular work surface defining a round work opening with a first open end for receiving a hollow axle blank to be formed and a second closed end, and an elongated central mandrel fixed within the punch body work opening projecting toward the first end thereof and from the second end thereof and having a round outer surface that is coaxial with and in an spaced relationship to the work surface defining the opening such that the axle blank is formed by the work surface about the mandrel for a greater distance than the spacing between the punch work surface and the mandrel so as to thereby provide a round spindle during relative movement between the punch and the axle blank along the direction the mandrel projects.

4,208,901

RIVET TONGS

Lorenz Elflein, Bad Neustadt, Fed. Rep. of Germany, assignor to Firma Alfred Honsel, Nieten - und Metallwarenfabrik, Fed. Rep. of Germany

Filed Nov. 3, 1977, Ser. No. 848,364
Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2724225
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—391 16 Claims



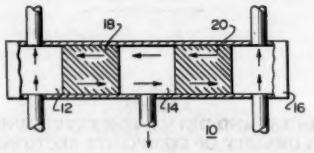
1. Rivet tongs for the setting of blind rivets provided with tear pins, said rivet tongs comprising two legs adapted for pivotal movement about a common pivot axis located intermediate the ends thereof, retaining means for receiving a rivet, and clamping means comprising first and second clamping elements, the second clamping element comprising at least a portion of a circular disk, said disk having a circular arcuate edge, the first clamping element and the at least a portion of a circular disk being adapted on actuation of said tongs to approach one another so as to grip said tear pin and to bend it around the circular arcuate edge of said circular disk portion and to be moved away from said retaining means so as to tear off said tear pin, both said first and second clamping elements being mounted for pivotal movement about the pivot axis of said legs.

4,208,902

GAS CONCENTRATION ANALYSIS METHOD AND SYSTEM

Bang M. Kim, Schenectady, N.Y.; John A. Quinn, Merion Station, and David J. Graves, Devon, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 20, 1978, Ser. No. 971,613
Int. Cl.[2] G01N *7/10*
U.S. Cl. 73—19 28 Claims



1. A method of measuring the concentration of at least one component of a test gas with respect to a reference gas comprising the steps of

(a) exposing a first membrane to the test gas and a second membrane to the reference gas,

(b) providing permeabilities of the first and second membranes so that the first membrane has a permeability ratio with respect to the test gas component over the reference gas which ratio is different from that of the second membrane permeability ratio with respect to the test gas component over the reference gas, and

(c) forming a measuring chamber between the first and second membranes within which the steady state pressure is proportional to the concentration of the component being measured.

4,208,903

AUTOMATIC CARBONATION SHAKER

Everett S. Hopper, Venice, Fla., and Robert B. Buffington, Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 19, 1979, Ser. No. 4,831
Int. Cl.[2] G01M *3/00*
U.S. Cl. 73—52 14 Claims

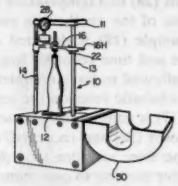
1. An apparatus for testing the internal physical parameters of a closed liquid-filled container with an axis passing therethrough substantially perpendicular to a closure member for said container comprising:

means for securing said liquid-filled container with said axis in a substantially vertical plane;

means for pivoting said liquid-filled container to a position wherein said axis thereof lies in a substantially horizontal plane;

means for shaking said liquid-filled container for a predeter-

mined period of time while said axis of said container lies in said horizontal plane; and



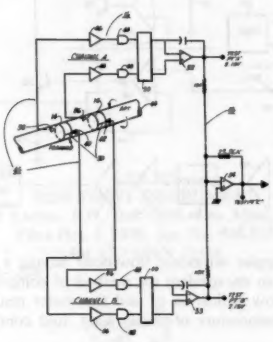
means for measuring internal physical parameters within said liquid-filled container at the end of said predetermined period of time.

4,208,904

METHOD OF MEASURING LONG SHAFT TORQUE

Earle R. Schindler, New Orleans, La., assignor to Resco, Inc., New Orleans, La.

Filed Jul. 17, 1978, Ser. No. 925,504
Int. Cl.[2] G01L *3/10*
U.S. Cl. 73—136 A **6 Claims**



5. A method of measuring long shaft torque comprising the steps of:

(a) affixing sine wave signals at longitudinally spaced locations about the periphery of said long shaft with the sine wave signals in phase;

(b) rotating said long shaft under a torque load;

(c) picking up phase shift signals in the sine wave signals at two diametrically opposed sides of the longitudinally spaced signals with two pairs of magnetic playback heads;

(d) independently integrating each of said phase shifts;

(e) electronically adding said integrated phase shifts.

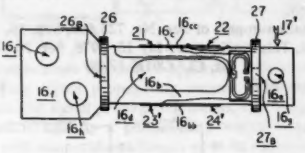
4,208,905

MINIATURE LOAD BEAMS

Martin Spoor, Cambridge, Mass., assignor to Bofors America, Inc., Edison, N.J.

Filed Sep. 22, 1978, Ser. No. 944,757
Int. Cl.[2] G01L *1/22*
U.S. Cl. 73—141 A **5 Claims**

1. A miniature strain-gage transducer comprising a relatively thin single-piece flat-stock element of material having high elasticity and having spaced substantially flat force-transmitting end portions which are interconnected by coplanar integral extensions of a relatively thin and substantially flat elastically-deformable sensing portion, said end portions extending in opposite directions from said sensing portion and said end portions and sensing portion being wholly of substantially one uniform thickness corresponding substantially to the thickness of flat stock material from which the element is fashioned, said sensing portion having at least one elastically-deformable region of configuration defined by parallel sides thereof and by edge surfaces extending substantially transversely to said sides, said elastically-deformable region being narrower than said end portions but of the same thickness, electrical strain gage means responsive to surface strains exhibited by said elastically-deformable region in response to forces transmitted therethrough by said end portions, said flat end portions being of proportions rendering them substantially rigid in directions parallel with the sides thereof and being integrally interconnected with said sensing portion to transmit substantially all loading forces to and from said sensing portion in said direc-



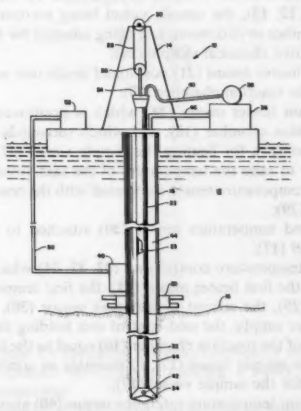
tions, and means for mounting said flat end portions to transmit loading forces originating outside said transducer through said thin end portions in said directions in which they are substantially rigid, said means for mounting including openings extending transversely through said end portions and having edge surfaces disposed to engage with members for applying loads to and for restraining said edge surfaces thereof, said edge surfaces of said deformable region and said end portions being sheared by blanking of said element from said material in sheet form, and said elastically-deformable region and said end portions being everywhere of expanse transversely to said edge surfaces which is at least about 60% of the thickness of said material.

4,208,906

MUD GAS RATIO AND MUD FLOW VELOCITY SENSOR

Liona R. Roberts, Jr., La Habra, Calif., assignor to Interstate Electronics Corp., Anaheim, Calif.

Filed May 8, 1978, Ser. No. 903,801
Int. Cl.[2] E21B *47/00*
U.S. Cl. 73—155 **25 Claims**



14. A method of predicting blowouts during the drilling of a well in which a drilling fluid is used, wherein the amount of gas

mixed with said drilling fluid is an indicator of blowout potential, comprising the steps of:

acoustically measuring the speed of sound in said mixture of drilling fluid and gas in said well;

obtaining a best estimate of the value of the speed of sound; and

computing the mass ratio of drilling fluid to gas based upon said best estimate of the value of the speed of sound.

4,208,907

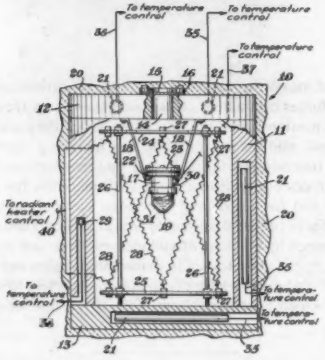
ACCELERATING RATE CALORIMETER AND METHOD OF OPERATION

Donald I. Townsend; Richard H. Solem, both of Midland; Edward E. Timm, Coleman, and Victor J. Caldecourt, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 723,686, Sep. 16, 1976, abandoned. This application May 15, 1978, Ser. No. 906,182

Int. Cl.[2] **G01K** *17/00*

U.S. Cl. 73—190 R **10 Claims**



1. An accelerating rate calorimeter instrument for measuring the adiabatic self-heat rate, and the time to maximum rate of an exothermic chemical reaction, as a function of temperature, to determine the adiabatic thermal runaway characteristics of reactive chemicals, the instrument including:

a closed sample vessel **(17)** which is positioned inside a closed reaction chamber **(10)** defined by wall members **(11, 12, 13)**, the sample vessel being surrounded by the chamber environment, and being adapted for containing a reactive chemical sample **(19)**;

a first heater means **(21)** positioned inside one wall member of the reaction chamber **(10)**;

a radiant heater means **(28)** which is positioned inside the reaction chamber **(10)**, and which surrounds the sample vessel **(17)**, for heating the sample vessel **(17)** incrementally to raise the temperature of the said vessel;

a first temperature sensor associated with the reaction chamber **(29)**;

a second temperature sensor **(30)** attached to the sample vessel **(17)**;

a first temperature control unit **(32, 33, 34)** which connects into the first heater means **(21)**, the first temperature sensor **(29)**, the second temperature sensor **(30)**, and a first power supply, the said control unit holding the temperature of the reaction chamber **(10)** equal to the temperature of the sample vessel **(17)**, to maintain an adiabatic condition for the sample vessel **(17)**;

a constant temperature reference means **(40)** associated with the second temperature sensor **(30)**;

a second temperature control unit **(38)** which connects into the radiant heater means **(28)**, and a second power supply;

a temperature and time recorder unit **(42, 43, 44)** associated with the second temperature sensor **(30)**;

wherein, the sample vessel **(17)** is heated by the radiant heater means **(28)** to a temperature at which the adiabatic self-heat rate of the exothermic reaction of the reactive chemical sample **(19)** is detected and recorded by the temperature and time recorder unit **(42, 43, 44)**, and the reaction is allowed to go to completion adiabatically, and during the adiabatic reaction the temperature of the sample vessel **(17)** is continuously sensed by the second temperature sensor **(30)** and recorded, as a function of time, by the temperature and time recorder unit **(42, 43, 44)**, to thereby derive the time to maximum rate for said reaction.

4,208,908

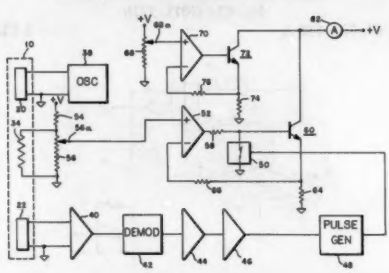
SPEED OF SOUND COMPENSATION FOR DOPPLER FLOWMETER

Richard M. Hickox, Naperville, Ill., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 23, 1978, Ser. No. 953,813

Int. Cl.[2] **G01F** *1/66*

U.S. Cl. 73—194 A **6 Claims**



1. In a Doppler ultrasonic flowmeter having a transducer imbedded in an encapsulant the method of compensating for changes in flow indication of said flowmeter resulting from changes in temperature of the flowing fluid comprising the steps of:

coupling said transducer to the outer surface of a conduit through which said fluid flows;

producing a signal varying in accordance with the temperature of said encapsulant, and

varying the indication of said flowmeter in accordance with the change in said signal.

4,208,909

ADMITTANCE SENSING PROBE HAVING MULTIPLE SENSING ELEMENTS

Frederick L. Maltby, Jenkintown, and L. Jonathan Kramer, Warminster, both of Pa., assignors to Drexelbrook Controls, Inc., Horsham, Pa.

Filed Nov. 24, 1978, Ser. No. 963,300

Int. Cl.[2] **G01F** *23/26*

U.S. Cl. 73—304 C **26 Claims**

1. An admittance sensing probe adapted to sense the level of materials within a vessel comprising:

a condition measuring probe electrode comprising a conductive material;

a compensating probe electrode comprising a conductive material;

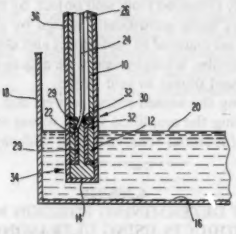
a conductor connected to one of said electrodes;

conductive shield means interposed between said conductor and said other of said electrodes, said conductive shield means also being interposed between said conductor and said materials within said vessel;

insulating means separating said condition measuring probe

electrode, said compensating probe electrode, and said conductive shield means; and

electrical connection means adapted to connect said shield



means to circuitry for maintaining the potential of said conductive shield means substantially the same as said compensating probe electrode and said condition measuring probe electrode.

4,208,910

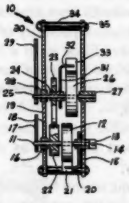
DEW POINT INSTRUMENT

Dietrich K. Lezius, P.O. Box 1089, Los Altos, Calif. 94022

Filed Oct. 5, 1978, Ser. No. 948,824

Int. Cl.[2] G01N *25/66*

U.S. Cl. 73—336 **13 Claims**



1. A dew point instrument comprising,

first transducer means for responding to relative humidity with a first transducer output,

second transducer means for responding to ambient temperature with a second transducer output,

logarithmic function generating means for executing the logarithm of relative humidity said logarithmic function generating means having first and second cams, said first cam mounted for angular movement in response to said first output, said cams rotatably meshing along the periphery thereof and, said logarithmic function generating means having an output associated with the angular position of said second cam,

connecting means coupled to the output of said logarithmic function generating means and to said second transducer output for additively combining the logarithm of relative humidity with ambient temperature and,

display means operatively associated with said connecting means, thereby yielding an indication of dew point temperature.

4,208,911

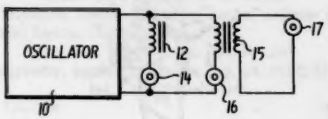
MAGNETIC SUBSTANCE HAVING SHARP PERMEABILITY TRANSITION TEMPERATURE, PROCESS FOR MAKING, AND APPARATUS

Dimiter I. Tchernev, 3905 Sierra Dr., Austin, Tex. 78731

Continuation of Ser. No. 781,952, Mar. 28, 1977, abandoned, which is a continuation of Ser. No. 293,592, Sep. 29, 1972, abandoned. This application Feb. 27, 1978, Ser. No. 881,592

Int. Cl.[2] G01K *7/38*

U.S. Cl. 73—362 CP **7 Claims**



1. A temperature responsive apparatus which comprises a time varying signal propagating means, magnetic structure coupled to said signal propagating means, said magnetic structure characterized by a permeability which is substantially constant with temperature changes up to its transition temperature when its initial permeability is abruptly and substantially reduced at a preselected temperature by a small temperature change whereby said transition temperature is preselected within a range of not greater than 0.1° C., said magnetic structure being maintained at less than saturation flux within said range, and responsive means coupled to said magnetic structure adapted to differentiate signals indicating the initial permeability state of said magnetic structure from said signal propagating means as relayed by said magnetic structure when it is below said preselected temperature and signals from the same source indicating the absence of said initial permeability state in said magnetic structure when said magnetic structure is above said preselected temperature.

4,208,912

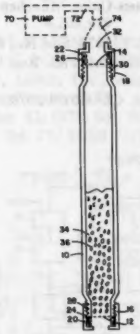
GAS SAMPLER/COLLECTOR FOR A MIXTURE OF GASSES

Charles M. Baldeck, Columbus, Ohio, assignor to Industrial Hygiene Specialties, Columbus, Ohio

Filed Feb. 13, 1979, Ser. No. 11,954

Int. Cl.[2] G01N *1/22*

U.S. Cl. 73—421.5 R **10 Claims**



1. Apparatus for sampling gaseous components or contaminants in a gaseous environment utilizing a liquid scrubbing medium comprising:

a vessel having at least a first and second air (gas) openings for the passage of air (gas) through said vessel,

a liquid in said vessel for scrubbing said air (gas) of gaseous components or contaminants, and

a hydrophobic porous material positioned in sealing engagement with said vessel over said openings.

4,208,913

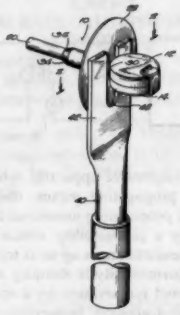
HOLDER FOR A STREAM SAMPLER

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186

Filed Apr. 19, 1979, Ser. No. 31,568

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—425.4 R **4 Claims**



1. In combination, a molten metal sampler and handle for manipulating the sampler for obtaining a sample of molten metal, said sampler comprising a pair of opposed metal mold parts having annular disc-shaped wall portions which cooperate to define a disc-shaped sample, semi-cylindrical projecting portions extending from said disc-shaped sample molds to form a neck for supporting a fill tube, and the improvement comprising a shield arranged around said neck, a sleeve arranged around said neck and pressed against said shield to maintain said shield against said disc-shaped mold parts, and said holder having a bifurcated end with a groove sized to interfit around said neck and wedge between said shield and said disc-shaped mold parts.

4,208,914

METHOD FOR DETERMINING THE INTERACTION BETWEEN A CHEMICAL SOLUTION AND AN OBJECT IMMERSED IN THE SOLUTION

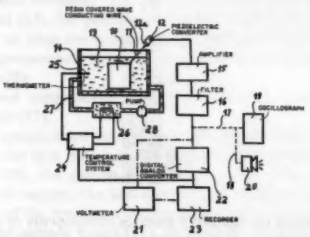
Wolf-Dieter Feist, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union München GmbH, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,655

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730622

Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—590 **10 Claims**



1. Method for determining the amount of material removed from an object comprising said material, in chemically removing at least a portion of said material from said object in reducing said object from oversize to a finishing size, wherein said object is immersed in a solution which chemically removes said material from said object, comprising the steps of:

(a) acoustically sensing the sound waves in the ultrasonic wave range of 50 KHz to 2 MHz emitted from the object immersed in said solution while said material is being chemically removed from said object, by means of probes, said waves being acoustically sensed by attaching a wire made of said material to said object and also attaching said wire to a probe, whereby said wire acts as a wave conductor from said object to said probe;

(b) amplifying the sensed sound waves; and

(c) interpreting the amplified sound waves to determine the amount of material removed from said object.

4,208,915

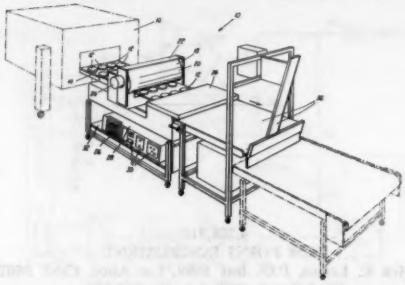
METHOD OF DETERMINING FOREIGN MATERIAL IN FOOD PRODUCTS USING ULTRASONIC SOUND

Bill R. Edwards, 14 Mada Palla Ct., Derby, Kans. 67037

Filed Jan. 31, 1979, Ser. No. 7,984

Int. Cl.[2] G01N *29/00*; B07C *5/34*

U.S. Cl. 73—620 **6 Claims**



1. A method of determining foreign material in food products using ultrasonic sound frequency detection, the steps comprising:

conveying food products on a conveyor below a rotatable cylinder which houses a plurality of ultrasonic transducers therein, the cylinder filled with a liquid sound frequency copulant, the cylinder having a surrounding flexible wall which can effectively assume the shape of the surface of the food products;

compressing the flexible wall of the cylinder against the top surface of the food products as the food products are conveyed thereby;

transmitting ultrasonic sound frequencies from the transducers through the liquid copulant and flexible wall and through the food products; and

receiving the reflected ultrasonic sound frequencies from the food products by the transducers for determining any unusual change in the sound frequency should there be foreign material in the food product.

4,208,916

ELECTRONIC ULTRASONIC SECTOR SCANNING APPARATUS AND METHOD

Kai E. Thomenius, Durham, and Richard B. Bernardi, Cheshire, both of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Sep. 13, 1978, Ser. No. 941,919

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—626 **17 Claims**

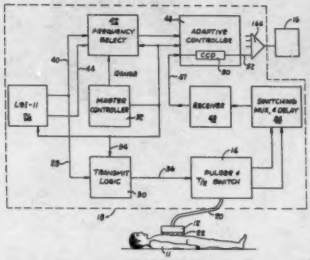
1. An electronically scanned phased array system for producing information describing structure of a subject by the use of ultrasonic energy, said system comprising:

(a) a transducer unit having ar array of ultrasonic energy conversion segments, said segments capable of converting

electrical signals to acoustic energy and re-converting acoustic energy to electrical signals;

(b) control circuitry for actuating the segments to direct concentrated ultrasonic energy into the subject at a predetermined incident angle;

(c) imaging circuitry coupled to the energy conversion segments for producing images representing electrical signals produced by the segments in response to ultrasonic echoes, said imaging circuitry including transmission delay circuits for imposing time delays on electrical signals from the segments, each transmission delay circuit comprising:



(i) a first delay element electrically connected to selected conversion segments for producing a first portion of time delay functionally related to the incident angle and for combining the delayed signal with undelayed signals from other of the selected conversion segments, and

(ii) a second delay element series coupled to the first delay element to provide a second dynamic time delay portion to the electrical signals, and

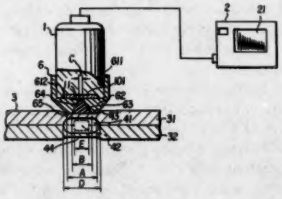
(d) display apparatus responsive to the image representing signals to produce an image of internal subject structure.

4,208,917

DEVICE FOR INSPECTING SPOT WELDS

Shigetsune Aoyama, Okazaki, and Kiyokazu Asai, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Feb. 27, 1979, Ser. No. 15,760
Claims priority, application Japan, Feb. 27, 1978, 53-22444
Int. Cl.² G01N *29/00*
U.S. Cl. 73—644 **7 Claims**



1. A device for inspecting spot welds, comprising:

a probe for receiving a reflected wave from a material to be inspected;

a weld state display unit for displaying a waveform, a pulse interval and a number of pulses of said reflected wave; and

a wave guide connected to an end portion of said probe for guiding said reflected wave from said material to be inspected to said probe, said wave guide having an ultrasonic wave propagating section in the form of a cylinder and an internal ultrasonic wave absorbing section obtained by filling an inside hold of said cylinder with an ultrasonic wave absorbing material, said ultrasonic wave propagating section being so dimensioned that the length of an ultrasonic wave propagating path is within the range calculated from the equation:

$$L = n\lambda \pm 0.2\lambda$$

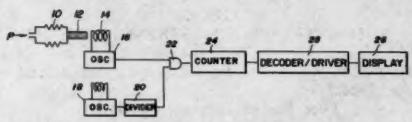
where n is an integer value, λ is the wavelenght (mm) of an ultrasonic wave, and L is the length (mm) of said ultrasonic wave propagating path.

4,208,918

DIGITAL PRESSURE SENSOR

Ryuichi Miyamae, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1978, Ser. No. 946,089
Claims priority, application Japan, Sep. 28, 1977, 52-131065
Int. Cl.² G01L *19/04*
U.S. Cl. 73—708 **9 Claims**



1. A digital pressure sensor comprising:

a first oscillator means for developing a first output signal;

frequency variation means for varying the frequency of said first output signal in response to variation of a detected pressure;

second oscillator means for developing a second output signal;

said first and second oscillator means being subjected to changes in temperature, humidity, and power supply voltage thereby causing the frequency of said first and second output signals to vary in response thereto;

said second oscillator means having a similar construction relative to said first oscillator means, said similar construction of said second oscillator means relative to said first oscillator means cancelling the variations in frequency of said output signals from said first and second oscillator means due to variations in said temperature, humidity, and power supply voltage; and

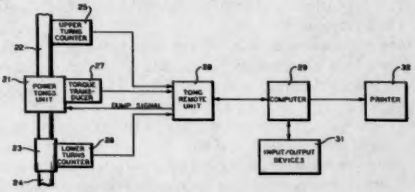
gate means responsive to said second output signal for determining a sampling period of said first output signal.

4,208,919

THREADED JOINT MAKING APPARATUS HAVING A D.C. POWER SUPPLY

James V. Motsinger, Austin, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Sep. 12, 1978, Ser. No. 941,720
Int. Cl.² B25B *23/14*
U.S. Cl. 73—761 **7 Claims**



3. In an apparatus for making threaded joints from a pair of threaded members including means for indicating the torque applied to one of the members to rotate it with respect to the other member and for indicating the actual turns made by the

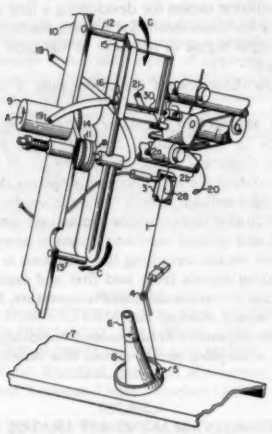
one member and a power supply for the indicating means, the power supply comprising: a source of direct current power; means for generating on and off switching signals; a transformer having primary and secondary windings; transistor switching means responsive to said on switching signals for turning on to connect said power source to said primary winding and responsive to said off switching signals for turning off to disconnect said power source from said primary winding to induce current flow in said secondary winding; means responsive to said turning off of said transistor switching means for rapidly discharging a base charge stored in said transistor switching means; and means responsive to the current flow in said secondary winding for generating power to the means for indicating applied torque and actual turns.

4,208,920

AUTOMATIC SPINNING STRENGTH TESTER

John S. Graham, Clemson, S.C., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,881
Int. Cl.[2] G01N *3/16*
U.S. Cl. 73—828 **8 Claims**



1. An apparatus for automatically testing and measuring the strength of yarn during the spinning process of textiles comprising in combination:

(a) a breaking assembly mounted to a friction clutch plate, said friction clutch plate capable of rotating said breaking assembly through about 200 degrees;

(b) a support plate affixed to said friction clutch plate for rigid support;

(c) a yarn clamping means affixed to said breaking assembly, said yarn clamping means capable of catching, applying tension, breaking, restoring and recombining a yarn strand;

(d) a tension transducer through which the yarn strand passes therethrough, said tension transducer able to measure the breaking strength of the yarn strand when said yarn clamping means applies tension and breaks said yarn strand passing through said tension transducer;

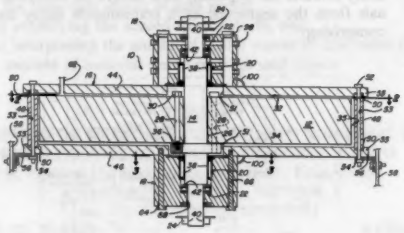
(e) a driving means suitably mounted to said support plate and affixed to said friction clutch plate, said driving means used to drive said friction clutch plate and thus said breaking assembly.

4,208,921

FLYWHEEL ENERGY ACCUMULATOR

John H. Keyes, P.O. Box 474, Nederland, Colo. 80466

Filed Apr. 11, 1977, Ser. No. 786,544
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—572 **12 Claims**



1. A flywheel assembly, comprising:

a flywheel generally having the shape of a disc of uniform thickness with two parallel radially extending surfaces and a peripheral outside surface of uniform diameter, said flywheel further having an axis of rotation and a center aperture formed through said flywheel coaxially with the axis of rotation;

an elongated center axle shaft received within the center aperture of said flywheel and extending coaxially with the axis of rotation, said center shaft generally having two opposed axial end portions;

connecting means associated with said flywheel and said center shaft for rigidly connecting said flywheel to said center shaft at a position intermediate the shaft end portions;

cage means of generally hollow interior configuration for receiving the flywheel within the interior thereof with the end portions of said center shaft extending therefrom, said cage means comprising a pair of flat plate members, one plate member positioned on each axial side of said flywheel, and a separate cylindrically shaped ring, and means for rigidly fastening said ring intermediate said plate members with said ring extending continuously between said plate members in next circumjacent and concentric relation with the outside peripheral surface of said flywheel;

a radial bearing assembly operatively connected to each axial end of said center shaft for supporting each axial end portion of said center shaft for rotation;

a thrust bearing assembly operatively connected to each axial end of said center shaft for supporting each end portion to limit axial movement of said center shaft;

a pair of bearing block members operatively attached to said cage means for supporting said bearing assemblies to allow free rotation of said flywheel within said cage means, each bearing block member being attached to one plate member to operatively support one radial and one thrust bearing assembly at each axial end of said center shaft, each bearing block member having at least one opening formed therein for receiving at least one bearing assembly; and

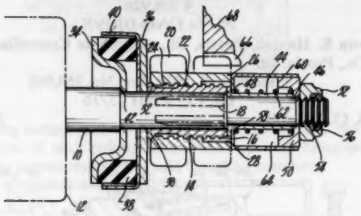
means associated with said bearing block means for supplying lubricant to each opening in said bearing block member and to each bearing assembly received within each opening.

4,208,922

ENGINE STARTER DRIVE ASSEMBLY WITH SHIELDING MEANS

Harold R. Mortensen, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Continuation of Ser. No. 741,812, Nov. 15, 1976, abandoned.
This application Aug. 11, 1978, Ser. No. 932,965
Int. Cl.[2] F02N *11/00*
U.S. Cl. 74—7 R **1 Claim**



1. An improved engine starter assembly comprising:
a driving shaft having an end and an opposite section disposed away from said end;
a pinion gear mounted on said opposite section for relative axial and rotatable movement with respect thereto, said pinion gear having a flange disposed radially from said shaft and extending along said opposite section of said shaft toward said end;
means moving said pinion gear to and from a retracted position opposite said end, into and out of driving engagement with an engine flywheel;
a stop axially fixed on said shaft toward said end in a position spaced away from said opposite section and said pinion gear when said pinion gear is in the retracted position, said stop locating said pinion gear when said pinion gear is in engagement with said engine to be started;
a bearing sleeve mounted about said shaft between said stop and said opposite section, said bearing sleeve having a radially extending shoulder opposite said axial stop, adjacent said opposite section, and touching said end of the driving shaft;
resilient means disposed about said shaft between said stop and said shoulder;
a shielding cup radially disposed about said shaft toward said end in a position spaced away from said opposite section, said shielding cup includes a radially inwardly extending lip slidably mounted on said bearing sleeve and biased by said resilient means into abutting engagement with said pinion gear flange and said bearing sleeve shoulder, and said shielding cup being slidably supported on said fixed axial stop;
whereby said flange of said pinion gear and said cup cooperate to prevent foreign matter from entering both between said flange and said shaft, and between said cup and said shaft.

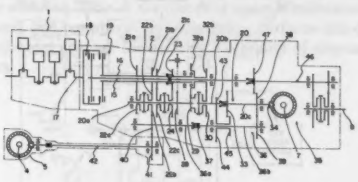
4,208,923

DRIVE MECHANISM FOR A FOUR-WHEEL-DRIVING TRACTOR

Seiichi Ikegami, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Aug. 25, 1977, Ser. No. 827,639
Claims priority, application Japan, Jun. 11, 1977, 52-69090
Int. Cl.[2] F16H *37/00*
U.S. Cl. 74—15.63 **5 Claims**

1. A four-wheel drive tractor transmission comprising a transmission housing, outer and inner input shafts in double tube construction having plural speed change gears and disposed to extend longitudinally of said transmission housing, travel speed change shaft means having at least first and second axially aligned gearing shafts extending longitudinally beneath said input shafts, said first and second gearing shafts each being provided with speed change gears, said housing further including differential gearing for driving a set of rear wheels, and a power-take-off shaft disposed rearwardly of the differential gearing and connected to said inner input shaft, said transmission further comprising:
a power-take-off gear mounted on said second gearing shaft in proximity to said differential gearing,
front wheel drive shaft means disposed co-extensively with



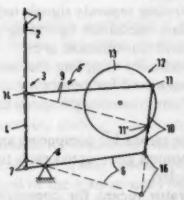
and beneath said travel speed change shaft means, said front wheel drive shaft means provided with front and rear gear means, said rear gear means arranged to engage said power-take-off gear, and
a forwardly projecting transmission shaft means disposed beneath the front wheel drive-shaft means and a gear mounted on said transmission shaft means arranged to engage a gear disposed on said front wheel drive-shaft means whereby power can be transmitted to a set of front wheels.

4,208,924

DRIVE FOR OPERATING A PUNCHING TOOL

Anton Brunner, Hauptstrasse 134, Durmersheim, Fed. Rep. of Germany (D-7552)

Filed Nov. 17, 1977, Ser. No. 852,283
Int. Cl.[2] F16H *21/18*
U.S. Cl. 74—47 **4 Claims**



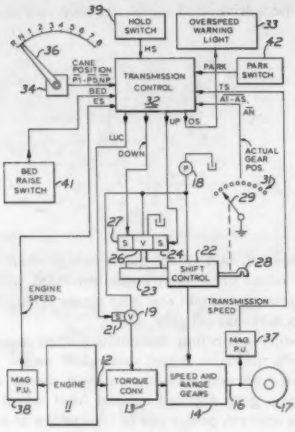
1. A drive for operating a punching tool, which comprises a toggle-joint lever having a first lever member and a second lever member, the punching tool being operatively connected to the first lever member and the second lever member forming part of a quadrilateral linkage; the linkage consisting of the second lever member, a first transverse lever element, a first linkage point at which one end of the second lever member is linked to one end of the first transverse lever element, another lever element, a second linkage point at which the other end of the first transverse lever element is linked to one end of the other lever element, the first transverse lever element being a two-armed lever, a second tranverse lever element, and a third linkage point at which the other end of the other lever element is linked to one end of the second transverse lever element; a fixed pivot supporting the first transverse two-armed lever element near the first linkage point for pivoting of the two-armed lever about the fixed point; and a crank drive, the third linkage point being linked to the crank drive.

4,208,925

ELECTRONIC TRANSMISSION CONTROL AND METHOD THEREFOR

Robert G. Miller, East Peoria, and Michael L. Render, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 11, 1977, Ser. No. 823,769
Int. Cl.[2] B60K *41/04*
U.S. Cl. 74—866 **123 Claims**



52. A control for a system including an engine and a transmission coupled to the output of said engine, said transmission having a plurality of gears in an automatic range which progressively increase in ratio from a preselected minimum automatic gear, said transmission having associated therewith an operator-controllable gear-selecting cane for selecting any of the gears of said transmission in said range, said control comprising:

means for generating a plurality of speed point signals, each indicative of the predetermined upshift or downshift transmission speed point for each of said gears of said automatic range,

means for generating separate signals indicative of said minimum gear, said maximum operating gear and the actual gear which said transmission is in,

means for periodically sampling the instantaneous speed of said transmission and for generating an actual speed signal indicative of the transmission speed each time such speed is sampled,

first comparator means for comparing said actual gear signal and said minimum gear signal each time the transmission speed is sampled,

second comparator means for comparing said actual gear signal and said maximum operating gear signal each time the transmission speed is sampled,

third comparator means for comparing said speed signal with at least one of the speed point signals for said actual gear each time the transmission is sampled,

gear-calculating means operable each time the transmission speed is sampled, and responsive to said first, second and third comparator means, said gear-calculating means including:

a first portion for determining whether the actual speed is above the upshift speed point for said actual gear when said actual gear is below said selected maximum operating gear, and, if so, for calculating the highest gear to which the transmission may be shifted, such highest gear being one immediately above a gear which is both lower than said maximum operating gear and has an upshift speed point lower than said actual speed, said highest gear being either said maximum operating gear or having an upshift speed point greater than said actual speed,

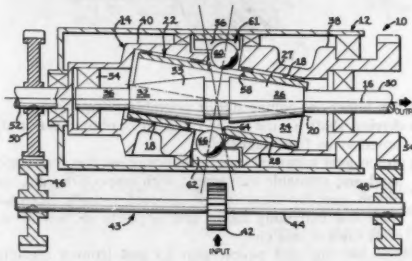
a second portion for determining whether the actual speed is below the downshift speed point for said actual gear when said actual gear is above said minimum gear, and, if so, for calculating the lowest gear to which the transmission may be shifted, such lowest gear being one immediately below a gear which is above said minimum gear and has a downshift speed point higher than said actual speed, said lowest gear being either said minimum gear or having a downshift speed point lower than said actual speed.

4,208,926

NUTATING DRIVE

Edwin E. Hanson, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 8, 1978, Ser. No. 958,908
Int. Cl.[2] F16H *15/16*
U.S. Cl. 74—191 **26 Claims**



1. In a nutating drive **(10)** having an outer rotatable structure **(14)** having a rotational axis **(16)**, a generally cylindrical cavity **(18)** axially therein, an axis **(20)** of said cavity **(18)** being at an angle relative to the rotational axis **(16)** of said rotational structure **(14)**, a generally cylindrical nutatable member **(22)** nutatingly movable within said cavity **(18)** and a member **(26** or **88)** having a surface **(27** or **94)** of a generally conical configuration with said surface **(27** or **94)** being in contact with a generally cylindrical surface **(28** or **86)** of said nutatable member **(22)**, said generally conically surfaced member **(26** or **88)** having an output shaft **(30** or **96)** generally coaxial with the rotational axis **(16)** of said rotatable structure **(14)**, the improvement comprising:

means **(56, 58, 60)** for maintaining said nutatable member **(22)** against rotation while maintaining substantially full nutational freedom of said nutatable member **(22)** and while maintaining said drive **(10)** in overall rotational balance, said maintaining means **(56, 58, 60)** including a relatively stationary structure **(12)** having a first axially extending slot **(56)**, a second axially extending slot **(58)** carried by said nutatable member **(22)** and aligned adjacent said first slot **(56)**, and a member **(60)** positioned in and carried by said aligned slots **(56** and **58)**, said member **(60)** being of larger dimension than the respective widths of said first **(56)** and second **(58)** slots.

4,208,927

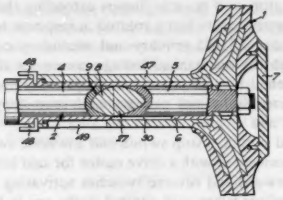
STEERING COLUMN COUPLING DEVICE

Lucas L. Kennis, Statielei 40, 2510 Mortsel, Belgium

Filed May 17, 1978, Ser. No. 907,041
Claims priority, application Belgium, Feb. 3, 1978, 256661
Int. Cl.[2] B62D *1/18*
U.S. Cl. 74—493 **2 Claims**

1. Steering column coupling device for intercoupling two constituent members of a steering column, wherein: a coupling member and locking means for interlocking said constituent members in a position wherein a cavity is formed between facing ends of said constituent members, said coupling member being mounted in and fitting in said cavity, mean adjacent said

constituent members and having at least one opening through which said cavity is accessible in a non-operative position of



said locking means, said cavity being inaccessible in an operative position of said locking means, said opening being positionable to permit removal of said coupling member.

4,208,928

TORSIONAL BALANCER DEVICE HAVING VISCOUS DAMPING AGENT

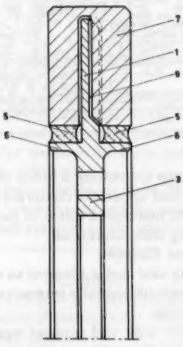
Joachim Conseur, and Manfred Hoch, both of Berlin, Fed. Rep. of Germany, assignors to Carl Hasse & Wrede GmbH, Berlin, Fed. Rep. of Germany

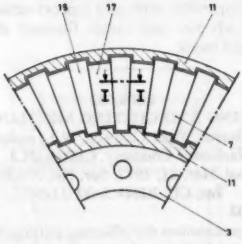
Filed Mar. 23, 1978, Ser. No. 889,198

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714230

Int. Cl.² F16F *15/10*

U.S. Cl. 74—574 **9 Claims**





1. A torsional balancer device comprising a primary mass having means thereon for mounting upon a rotary shaft to be damped, an annular secondary mass, a plurality of radially extending leaf springs resiliently supporting and mounting said secondary mass around a peripheral portion of said primary mass so that said secondary mass is capable of resilient rotational movement with respect thereto, said primary and secondary masses having radial mutually facing surfaces and peripheral mutually facing surfaces to define working spaces therebetween, a viscous damping agent in said working spaces, a plurality of alternate mutually engaging ribs and grooves on said radial mutually facing surfaces, said engaging ribs and grooves defining a plurality of alternating chambers the widths of which are varied during relative movement of said secondary mass to said primary mass such that the damping agent is forced from a narrowing chamber into a widening chamber whereby shearing stress of the damping agent is maintained at a minimum, said peripheral mutually facing surfaces also comprising ribs and grooves for defining a plurality of alternating chambers.

4,208,929

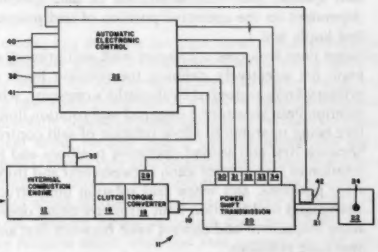
AUTOMATIC ELECTRONIC CONTROL FOR A POWER SHIFT TRANSMISSION

Dean L. Heino, Cedar Falls, and Wayne E. Gruben, Dubuque, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 21, 1976, Ser. No. 752,747

Int. Cl.² B60K *41/22*

U.S. Cl. 74—731 **15 Claims**

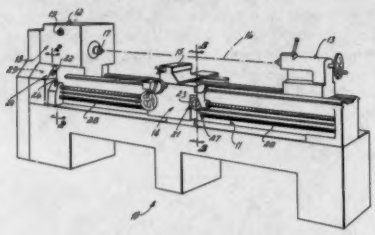


1. In a transmission system including a torque converter driven by an engine, torque converter lockup means for locking up the torque converter to provide a direct drive therethrough, a transmission driven by the torque converter and shiftable among a plurality of speed ratios to provide a variable speed transmission output, shifting means operatively associated with the transmission for selectively shifting said transmission among the plurality of speed ratios, speed sensor means responsive to the speed of the transmission output to provide a speed signal proportional thereto, and shift control means for selecting desired transmission speed ratios and providing ratio signals representative thereof, an automatic control comprising: mode select means selectable between first and second transmission system operating modes and respectively providing first and second mode signals representative thereof; and logic means operatively associated with the mode select means, the shift control means, and the speed sensor means to automatically cause the shifting means to shift said transmission within a first range of speed ratios at a first set of predetermined speed signals and to automatically inhibit the torque converter lockup means from locking up the torque converter when the first mode signal is provided, and to automatically cause the shifting means to shift said transmission within a second range of speed ratios at a second set of predetermined speed signals and to automatically cause the torque converter lockup means to lock up the torque converter at a third set of predetermined speed signals when the second mode signal is provided.

4,208,930
SPINDLE CONTROL MECHANISM

Otto Hermann, Cincinnati, Ohio, assignor to LeBlond Incorporated, Cincinnati, Ohio

Filed Feb. 9, 1978, Ser. No. 876,468
Int. Cl.[2] B23B 19/00, 25/06
U.S. Cl. 82—28 A 16 Claims



1. An improved spindle control mechanism for a spindle of a lathe, said mechanism comprising

a manually rotatable primary control knob, said primary control knob being connected to said lathe, and said primary control knob being rotatable between first, second and third operative positions,

connector means connecting said primary control knob to said lathe's spindle for controlling the rotation attitude of said spindle, the rotation attitude of said spindle being dependent on the operative position of said primary control knob, and

rotation limit structure connected with said primary control knob for selectively defining the rotation limits of said primary knob as desired by the lathe's operator, when said rotation limit structure is engaged said rotation limit structure being operable to allow rotation of said control knob between first and second operative positions and to deny rotation of said control knob between first and third operative positions, and when said rotation limit structure is disengaged said rotation limit structure being operable to allow rotation of said control knob between first and third operative positions.

7. An improved spindle control mechanism for a lathe, said lathe having a headstock, a spindle, a drive motor and a transmission for said spindle, a tool carriage, and a tailstock, said mechanism comprising

a manually rotatable primary control knob, and a manually rotatable secondary control knob, said primary knob being mounted on the headstock of said lathe and said secondary knob being mounted on the carriage of said lathe,

a control shaft connected with the transmission of said lathe for controlling the rotation attitude of said spindle, said control shaft extending from the headstock end to the tailstock end of said lathe,

a primary connector lever connected to said control shaft, and a primary connector link pivotally connected to said connector lever at one end and pivotally connected to said primary control knob at the other end, said primary connector link's pivotal connection with said primary control knob being located at a position eccentric to the rotational axis of said primary control knob,

a secondary connector lever connected to said control shaft, said secondary connector lever being connected in a fashion that permits longitudinal motion of said lever along said control shaft but prevents rotational motion of said lever relative to said control shaft, and a secondary link pivotally connected at one end to said secondary control knob and pivotally connected at the other end to said secondary connector lever, said secondary connector link's pivotal connection with said secondary control knob being located at a position eccentric to the rotational axis of said secondary control knob,

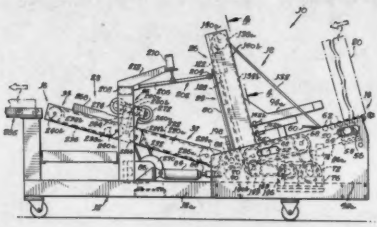
a switch control drum connected to one of said primary and secondary control knobs, said control drum having forward, stop, and reverse fingers extending therefrom, and said control drum being rotated in response to rotation of either one of said primary and secondary control knobs through the mechanical linkage connector therebetween established by said control shaft, primary and secondary connector links and primary and secondary connector levers, and

a forward switch, a stop switch and a reverse switch electrically connected with a drive motor for said lathe's spindle, said forward and reverse switches activating said spindle drive motor when said control knobs are in forward and reverse operative positions, and said stop switch deactivating said drive motor when said control knobs are in a stop position.

4,208,931
METHOD AND APPARATUS FOR CUTTING BLOCKS OF BULK MATERIAL

Truman F. Collins, Springfield, Mo., assignor to Kraft, Inc., Glenview, Ill.

Filed Sep. 25, 1978, Ser. No. 945,418
Int. Cl.[2] B26D 1/02
U.S. Cl. 83—44 34 Claims



1. Cutter apparatus for cutting a block of bulk material into smaller size slabs, said apparatus comprising, in combination;

means adapted to maintain a block of bulk material in position for cutting slabs therefrom,

an elongate cutter filament,

means supporting said cutter filament so as to define a reach thereof disposed substantially transverse to said block and spaced therefrom,

means cooperative with said support means and adapted to effect movement thereof so as to pass said reach of cutter filament through said block in a direction transverse to said reach of cutter filament and cut a slab from said block,

and means cooperative with said support means and adapted to axially advance said cutter filament after each pass through said block.

4,208,932
FEEDING AND CUTTING MECHANISM

Andrew W. Anderson, West Caldwell, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Mar. 11, 1977, Ser. No. 776,550
Int. Cl.[2] B26D 3/00, 11/00
U.S. Cl. 83—303 15 Claims

1. A cutting mechanism for effecting cutting thin film materials such as polyethylene, polypropylene and polyesters, said mechanism comprising:

(a) backing roller means having a longitudinal axis of rotation and including bearing wheels,

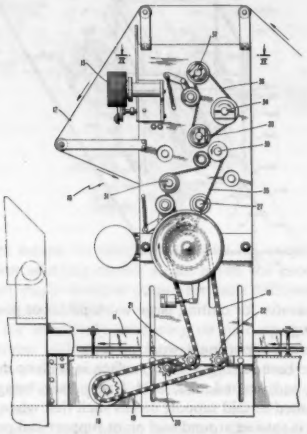
(b) a cutting element detachably mounted on a rotatable base means and having a cutting edge which intermittently cuts

the thin film and a longitudinal axis of rotation disposed parallel to the axis of rotation of the roller means,

(c) said bearing wheels being freely rotatably mounted about their axis of rotation,

(d) means mounting the bearing wheels to resiliently float in a direction transverse to a plane extending vertically through the axis of rotation for the backing roller means,

(e) the mounting means including two carrier elements pivotally mounted on opposite sides of a carrier body portion and biasing means mounted on said carrier body portion for resiliently urging the carrier element about its pivot toward the cutting means,



(f) a bearing wheel being rotatably mounted on each of the carrier elements,

(g) said carrier body portion is slidably fixed on shaft means extending in a direction parallel to the axis of rotation for the roller means and is laterally movable to effect movement of the roller means in direction parallel to the axis of rotation for the roller means,

(h) said cutting element being mounted for disposition adjacent a bearing wheel to cut against said adjacent bearing wheel upon each rotation of the cutting element.

4,208,933

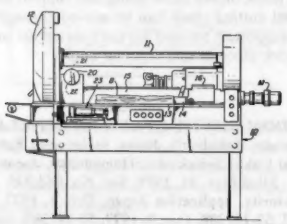
METHOD AND MACHINE FOR SLICING MATERIALS

Lawrence M. Skidmore, Phoenix, Ariz., assignor to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 763,994, Jan. 31, 1977, Pat. No. 4,114,492. This application Jul. 31, 1978, Ser. No. 929,844

Int. Cl.[2] B26D *7/06, 4/22*

U.S. Cl. 83—367 **4 Claims**



1. A method of slicing a plurality of drafts of a resilient material by moving said material through a slicing station comprising the steps of exerting a compressive force on said material to move said material through said station, relieving said force after each of said drafts have been sliced to prevent the slicing of slivers between said drafts.

4,208,934

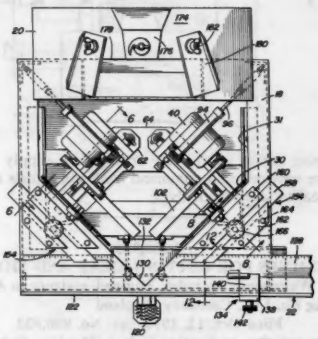
MITER SAW MACHINE

Leslie W. Wall, P.O. Box 1425, Brownwood, Tex. 76801

Filed Mar. 20, 1979, Ser. No. 22,345

Int. Cl.[2] B27B *5/20*

U.S. Cl. 83—468 **9 Claims**



1. In a miter saw machine having a frame, a guide fence fixed to the frame and a pair of rotary saw blades, means mounting said saw blades for movement along converging paths, comprising a base fixed to the frame, a pair of adjustable supports, means pivotally connecting said support to the base for angular adjustment about parallel spaced vertical adjustment axes, a pair of posts respectively carrying said saw blades, pivot means connecting said posts to the supports for displacement of the saw blades about pivotal axes intersecting said vertical adjustment axes, bearing means mounting the saw blades on said posts for rotation about rotational axes intersecting the adjustment axes, and means for locking the supports in angularly adjusted positions on the base establishing intersection of said converging paths of the saw blades at the guide fence.

4,208,935

CONTROL SYSTEM FOR A HYDRAULIC PRESS

Friedrich Kollmar, Grafenau, Fed. Rep. of Germany, assignor to Moog GmbH, Böblingen, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,109

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808091

Int. Cl.[2] B26D *5/12*

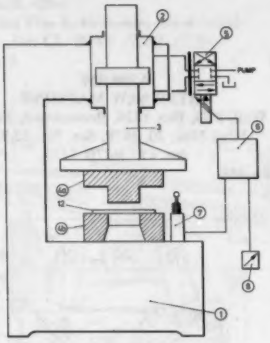
U.S. Cl. 83—617 **14 Claims**

1. A control system for a hydraulic press, said press having a hydraulic actuator, an electrohydraulic servovalve operatively arranged to supply pressurized hydraulic fluid from a suitable source thereof to said actuator to cause selective movement of its ram, and having an upper die mounted on said ram for movement toward a lower die, and wherein a workpiece is adapted to be interposed between said upper and lower dies, said control system comprising:

signal generator means for generating, during a controlled portion of the range of movement of said ram, a progressively increasing command signal indicating the desired position of said upper die during said portion;

feedback means arranged to generate a negative feedback

signal indicating the actual position of said upper die during said controlled portion; and



summing means operatively arranged to supply the difference between said command feedback signals as an error signal to said servovalve.

4,208,936

MACHINES FOR CUTTING MEAT AND THE LIKE

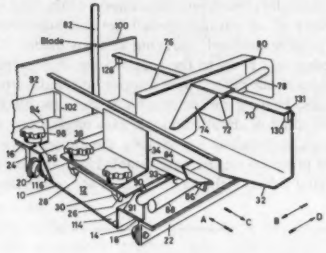
John A. Whitehouse, Norwich, England, assignor to AEW Engineering Co. Ltd., Costessey, England

Filed Oct. 12, 1978, Ser. No. 950,832

Claims priority, application United Kingdom, Oct. 17, 1977, 43037/77; Nov. 16, 1977, 47594/77

Int. Cl.[2] B26D *4/42, 4/44*

U.S. Cl. 83—713 **13 Claims**



1. A jig for a bandsaw to facilitate the severing of material by the cutting blade of the bandsaw into portions and adapted to be fitted to a bandsaw, comprising in combination

(a) a main frame movable in a first direction parallel to the direction of cut of the cutting blade,

(b) a fence situated on the opposite side of the cutting blade to the main frame.

(c) a sub-frame adapted to receive and support a slab of material and mounted on the main frame and movable relative thereto in a second direction which is generally perpendicular to the said first direction so as to allow a slab of material to be moved towards and away from the blade,

(d) first handle means for effecting the movement of the sub-frame relative to the main frame,

(e) a thrust exerting member slidable relative to the sub-frame in the said second direction,

(f) second handle means linked to the said thrust exerting member whereby the latter can be pushed forward from a rest position in the said second direction to urge a slab of material on the sub-frame towards and into contact with the said fence, and

(g) means for returning the sub-frame to the said rest position in the event that the operator removes hand pressure from the said first handle means.

4,208,937

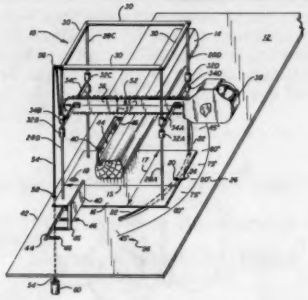
APPARATUS FOR ACCURATELY CUTTING TIMBERS

Lynn Marshall, P.O. Box 26, White Pine, Tenn. 37890

Filed Sep. 20, 1978, Ser. No. 943,767

Int. Cl.[2] B27B *17/02*

U.S. Cl. 83—799 **7 Claims**



1. Apparatus for cutting large work pieces at precise angles comprising:

means for supporting a work piece;

a frame base having a work surface in a plane defined by a first and second axis, said frame base being pivotally mounted to said support means such that when said frame base is rotated around said pivot support and positioned at a selected angle with respect to said support means, said work surface remain in said plane defined by said first and second axis;

a plurality of support members secured to said frame support base and mounted perpendicular to said work surface of said frame base;

a plurality of guide means for moving along each of said plurality of support members;

a plurality of support braces each having a first and further end, said first end permanently secured to said guide means, and said second end suitable for rigidly mounting the bar of a chain saw thereto; and

a chain saw having a power source, a cutting chain and a chain saw bar for guiding and supporting said cutting chain, said chain saw bar having a long and a short axis which defines a cutting plane and said chain saw bar being mounted to said support braces such that said long axis of said chain saw bar is substantially parallel to said work surface and said cutting plane is perpendicular to said work surface so that said chain saw is raised and lowered as said guide means move along said support member such that said cutting chain can be moved through said work piece supported by said support means to precisely cut said work piece at said selected angle.

4,208,938

RANDOM RHYTHM PATTERN GENERATOR

Yoh-ichi Kondo, Kokubunji, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Nov. 21, 1978, Ser. No. 962,730

Claims priority, application Japan, Dec. 8, 1977, 52-147387; Dec. 8, 1977, 52-147388; Dec. 8, 1977, 52-147389; Jan. 11, 1978, 53-1707

Int. Cl.[2] G10H *1/00*

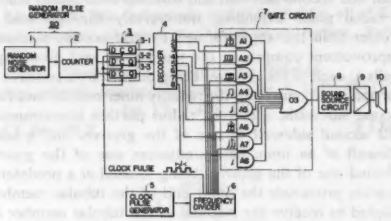
U.S. Cl. 84—1.03 **10 Claims**

1. A random rhythm-pattern generator comprising:

a clock pulse generator means for producing basic clock

pulses, a frequency divider means for dividing the basic clock pulses, a random pulse generator means producing pulses with random repetition time,

a condition selecting circuit means for generating an output of plural bits according to an output of the frequency divider means and pulses from the random pulse generator means, the switching of the state of the output condition of the condition selecting circuit means being timed by a pulse from said frequency divider means, and the output condition being determined by the output of the random pulse generator means,



a decoder means, to which said plural bit output of the condition selecting circuit means is fed, for producing a different single decoded output for each different combination of plural bits,

a means for selectively producing on its outputs different pulse trains with different repetition cycles according to respective combinations of an output of the decoder means and an output pulse from said frequency divider means, and

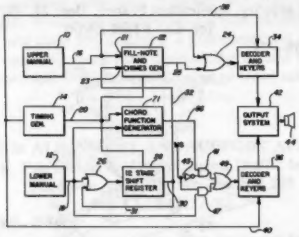
sound source circuit means to which the outputs of said pulse train producing means are applied.

4,208,939

DATA ENCODER FOR AN ELECTRONIC MUSICAL INSTRUMENT

William Wangard, Melrose Park, and David T. Starkey, Oak Park, both of Ill., assignors to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Apr. 2, 1979, Ser. No. 25,880
Int. Cl.[2] G10H *1/00, 5/10*
U.S. Cl. 84—1.17 **21 Claims**



1. In a musical instrument having an upper keyboard manual, a clock signal source and an upper manual data channel responsive to said clock signal for developing time multiplexed data pulses defining depressed keys on said upper manual, a chimes generator comprising:

a multiple stage shift register responsive to said clock signal and having a serial data output terminal;

means for simultaneously loading a predetermined pattern of logic bits in said shift register in response to one of said upper manual data pulses, said predetermined pattern of logic bits defining a sequence of data pulses adapted for producing a chimes-like tone; and

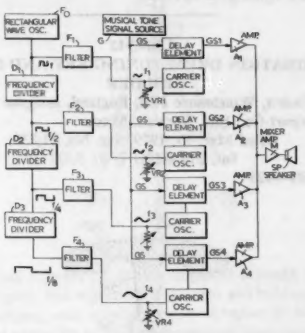
means for coupling the output of said shift register to said upper manual data channel.

4,208,940

DEVICE FOR PRODUCING AN ENSEMBLE EFFECT

Tooru Tsurubuchi, Osaka, Japan, assignor to Roland Corporation, Osaka, Japan

Continuation of Ser. No. 664,355, Mar. 5, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,343
Claims priority, application Japan, Mar. 19, 1975, 50-33689
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.24 **6 Claims**



1. A device for producing an ensemble effect in an electronic musical instrument comprising a plurality of at least three parallel electronic delay circuits adapted to be supplied with the same musical tone signal; a plurality of delay time modulating means coupled to corresponding ones of said electronic delay circuits and each having a control input for modulating the delay time in said corresponding electronic delay circuit according to the signal applied to said control input; a modulating signal generating means coupled to said control inputs of each of said plurality of delay time modulating means for supplying a modulating signal of a single frequency to each of the control inputs of the respective delay time modulating means which has a different frequency from each of the other modulating signals and said different frequencies of the respective modulating signals being an integral fraction of the frequency of the highest frequency modulating signal; a plurality of amplifier means coupled to corresponding ones of said delay circuits for amplifying the output thereof; and mixing means coupled to said amplifier means for mixing the amplified outputs, whereby said integral fraction relationship of said modulating signals promotes cancellation of any vibrato effect thereby enhancing the ensemble effect.

4,208,941

ADJUSTABLE BRIDGE SADDLE

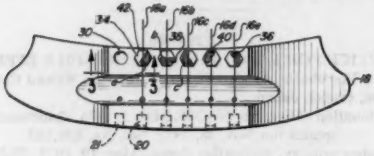
Abraham J. Wechter, Kalamazoo, Mich., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Mar. 14, 1979, Ser. No. 20,263
Int. Cl.[2] G10D *3/04*
U.S. Cl. 84—298 **10 Claims**

2. In a guitar or other fretted stringed musical instrument of the type having a tuning peg for anchoring one end of a string, means for anchoring the opposite end of said string, and frets located at spaced intervals along said string for determining musical pitches; the improvement comprising:

means defining an aperture having a circular cross-section disposed diametrically underlying said string near said opposite end thereof; and

saddle means received within said aperture having a string supporting surface operable for adjusting the vibrating



length of said string in response to rotation of said saddle means within said aperture.

4,208,942

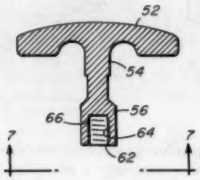
COMBINATION DRUM TUNING KEY AND CYMBAL HOLDER

Robert Henrit, Winchmore Hill, England, assignor to A. Zildjian Export Co., Inc., Norwell, Mass.

Filed Mar. 19, 1979, Ser. No. 21,339

Int. Cl.[2] G10G *7/00, 5/00*

U.S. Cl. 84—421 **7 Claims**



1. Combination drum tuning key and cymbal holder comprising

a handle and

a barrel portion with an axis connected to said handle,

said barrel having internal walls defining a cavity extending inwardly along said axis from an end of said barrel,

the cavity being square in cross section and adapted to turn a drum tuning screw head,

said interior walls of said cavity also being threaded for threaded attachment to the circular threaded end of a cymbal stand.

4,208,943

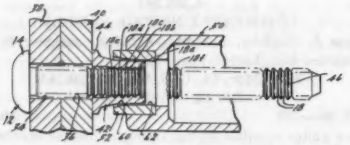
MULTIGRIP FASTENER

Walter J. Smith, Waco, Tex., assignor to Huck Manufacturing Company, Detroit, Mich.

Filed Apr. 24, 1978, Ser. No. 899,591

Int. Cl.[2] F16B *19/05*

U.S. Cl. 85—7 **13 Claims**



1. In a two piece fastener for fastening a plurality of workpieces together with the workpieces having a thickness varying from a determinable minimum to a determinable maximum thickness, comprising a pin member having a head and a shank portion having a plurality of grooves thereon and a tubular member adapted to be swaged into locking engagement into the shank portion of the pin member by means of a tool having a swaging anvil adapted to engage the tubular member and gripping means adapted to grip the shank portion, the tool being actuable to apply a relative axial tensile force between the pin member and the tubular member whereby the tubular member is swaged into a predetermined number of said plurality of grooves of the shank portion of the pin member, said predetermined number of said grooves being substantially identical annular combination locking and breakneck grooves, each of said predetermined number of said grooves being defined by first and second radially outwardly diverging sidewalls, said first sidewall being positioned closer to said head than said second sidewall and forming an included angle with a radial plane extending transversely through said shank greater than the angle formed by said second sidewall, the improvement comprising the juncture of said diverging sidewalls at each of the grooves being defined by a concave radius portion interconnecting the radially inner ends of said first and second sidewalls, a convex radius portion interconnecting a said second sidewall of one of the grooves and a said first sidewall of an immediately adjacent one of the grooves, a selected one of the grooves being located at a predetermined location proximate the outer end of the tubular member and adapted to receive the material of the tubular member as it is swaged onto the shank portion, said first and second sidewalls being angulated such as to provide a relative axial force between said sidewalls in said selected one of the grooves, said force being generated by the material of the tubular member as it is swaged therein, whereby said relative axial force will be additive with the relative axial tensile force applied by the tool such that the shank portion will fracture at said selected one of the grooves, said concave radius portion being of a magnitude selected to provide a predetermined stress concentration to facilitate fracture at said selected one of the grooves in response to the combination of said relative axial force and said relative axial tensile force, said convex radius portion being of a magnitude selected to facilitate a desired flow of material during swaging of the tubular member, any one of the grooves being capable of functioning as said selected one of the grooves when located at said predetermined location while said pulling tool exerts the relative axial tensile force on the pin member.

4,208,944

FASTENING DEVICES

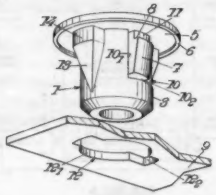
Richard Moryl, Maisons Laffitte, France, assignor to C.O.M.E.T. Compagnie de Materiel et d'Equipements Techniques, Senlis, France

Filed Dec. 21, 1977, Ser. No. 862,910

Claims priority, application France, Dec. 21, 1976, 76 38545

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—71 **8 Claims**



1. A device for fastening by screwing an object on a support perforated with a hole, formed by a screw and a one-piece clip made from a moulded material comprising a socket with a relatively thick wall adapted to penetrate jointingly into the hole of the support and to receive the screw so that it ploughs its furrow therein itself, said socket forming at one of its ends a continuous ring and being extended radially at its other end by a continuous transverse flange adapted to bear on the edge of said hole, the wall of the socket comprising in addition

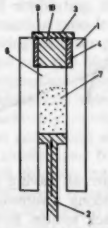
radially thickened portions each bordered by two longitudinal slots which pass through said wall from side to side, characterised in that these thickened portions are connected to the inner edge of the flange by bridges and the longitudinal slots being inter-connected by a transverse slot spaced axially further from the flange than said thickened portion, this latter being thus surrounded by a U-shaped slot formed by the longitudinal and transverse slots, the free ends of the U being situated at the level of the flange.

4,208,945

METHOD OF AND DEVICE FOR PRESSING PYROTECHNICAL CHARGES

Tore Davegårdh; Nils Gellerstedt, and Folke Sahlin, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 4, 1978, Ser. No. 948,444
Claims priority, application Sweden, Oct. 5, 1977, 7711130
Int. Cl.[2] F42B *4/00*
U.S. Cl. 86—20 R **9 Claims**



1. A method of pressing pyrotechnical charges such as illuminating charges, comprising the steps of:
providing a tubular pressing chamber having a space for accommodating a case for a charge;
placing a quantity of charge material in said chamber;
precompacting said charge material within said chamber but outside said case;
inserting said charge material into said case following said precompacting;
final compacting said charge within said case; and
pressing said case and said charge from said chamber.

5. An apparatus for pressing pyrotechnical charges, comprising:
a tubular pressing chamber having a space for accommodating a case for a charge; and
means coacting with said chamber for precompacting a quantity of charge material within said chamber but outside said case; for inserting a precompacted charge into said case and there final compacting it; and for pressing the case and final compacted charge from said chamber.

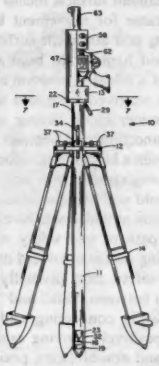
4,208,946

FIREARM ALIGNMENT AND SUPPORT APPARATUS

Norman E. Van Sickle, 6 N. 1st, Council Bluffs, Iowa 51501

Filed Jan. 23, 1978, Ser. No. 871,293
Int. Cl.[2] F41C *3/02*
U.S. Cl. 89—37 BA **11 Claims**

1. A firearm alignment and support apparatus for use with a tripod and a firearm having a trajectory barrel, comprising:
a vertical support member having a first end engageable with the ground and a second end;
alignment and holding means attachable to the tripod for vertically aligning and holding said vertical support member in a substantially vertical position; and
a firearm cradle means engageable with the second end of said vertical support member for supporting the barrel of a firearm in a substantially vertical position; wherein said alignment and holding means includes a plate securable to the tripod having a hole disposed therethrough; and a plurality of adjustable alignment and holding tools attached to said plate, such that said vertical support member is disposed through the hole in said plate and said adjustable alignment and holding tools are adjustable to contact said vertical support member and position it in an alignment setting, said adjustable alignment and holding tools preventing said vertical support member from horizontal displacement while not preventing all vertical displacement of said vertical support member when said



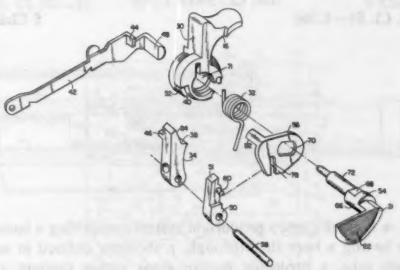
vertical support member is disposed through the hole in said plate, said adjustable alignment and holding tools thus permitting said vertical support member to move downward vertically in response to a recoil force resulting from the firing of said firearm, said vertical support member thus transferring said recoil force to the ground rather than to said tripod with the result that said alignment setting is not substantially disturbed by the firing of said firearm.

4,208,947

FIREARM HAMMER BLOCKING SAFETY MECHANISM

Robert L. Hillberg, Chesire, Conn., assignor to Wildey Firearms Company, Inc., Cold Spring, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,271
Int. Cl.[2] F41C *17/08*
U.S. Cl. 89—148 **8 Claims**



1. In a firearm, the combination comprising: a frame, a firing pin slidable for and aft relative said frame and having a rear end, means biasing said firing pin rearwardly toward a rearwardly limited normal position, a hammer having a striking face, means connecting said hammer to said frame for pivotal movement of said hammer relative to said frame between a down position at which said striking face engages the rear end of said firing pin and shifts said firing pin forwardly of said normal position and other positions including a safety position

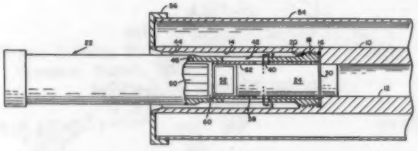
and a cocked position reached by pivoting said hammer rearwardly from said down position, said striking face of said hammer being spaced from said rear end of said firing pin when said hammer is in said safety position and said striking face of said hammer being spaced still further from said rear end of said firing pin when said hammer is in said cocked position, a hammer spring working between said hammer and said frame urging said hammer toward said down position, said hammer having a sear notch surface and a safety notch surface, a sear having an abutment surface, means pivotally connecting said sear to said frame for movement between an engaged position at which its said abutment surface engages said sear notch surface of said hammer to hold said hammer in said cocked position and a released position at which its said sear abutment surface is removed from said sear notch surface of said hammer, a hammer block having an abutment surface, means pivotally connecting said hammer block to said frame for movement between a blocking position at which said block abutment surface is engageable with said safety notch surface of said hammer to hold said hammer in said safety position and a non-blocking position at which said block abutment surface is removed from the path of said safety notch surface of said hammer, means urging said sear toward its engaged position, a manually operable safety cam pivotally connected to said frame for movement between "safe" and "non-safe" positions, and means mechanically connecting said safety cam to said hammer block for positively moving said hammer block between its blocking and non-blocking positions in response to movement of said safety cam between its "safe" and "non-safe" positions respectively, said safety cam also including means engageable with said sear to shift said sear from its engaged to its released position as said safety cam is moved from its "non-safe" to its "safe" position.

4,208,948

HIGH EFFICIENCY PROPULSION SYSTEM

Bernie J. Cobb, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1978, Ser. No. 963,065
Int. Cl.[2] F41F *15/00*
U.S. Cl. 89—1.706 **5 Claims**



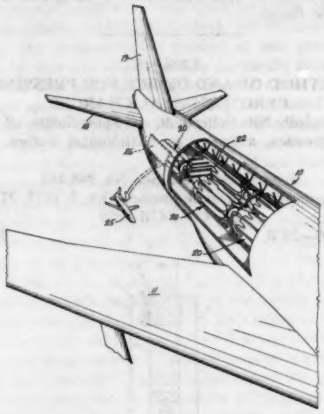
1. A high efficiency propulsion system comprising a launch tube having a bore therethrough, a shoulder defined in said launch tube, a projectile having shear means thereon and mounted in said bore with said shear means against said shoulder, and gas generator means securing said shear means against said shoulder, said gas generator means having propellant in a chamber thereof, a passage from said chamber that is open to the atmosphere when said shear means has been sheared and said projectile has been caused to move away from said gas generator means, said passage being open to the atmosphere by a throat defined between an outer surface of said gas generator means and said bore, and igniter means for igniting said propellant to cause said projectile to be launched at high impulse.

4,208,949

MISSILE CARRIER AIRPLANE

Kenneth R. Boilsen, Woodinville, Wash., assignor to Boeing Commercial Airplane Company, Seattle, Wash.

Filed May 3, 1978, Ser. No. 902,476
Int. Cl.[2] F41F *3/06*
U.S. Cl. 89—1.801 **11 Claims**



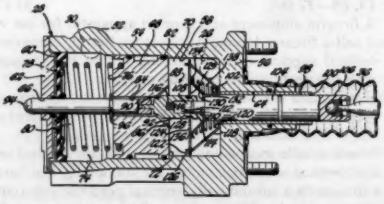
1. A missile carrier aircraft having an internal missile cargo compartment running along a substantial length of the fuselage, comprising: a track system having a pair of adjacent dual-rail tracks stationarily mounted to the floor of said compartment and running approximately the longitudinal length thereof; said track system having a lateral transfer track terminal at either end of said compartment; said lateral transfer track terminal comprising a section of dual-rail track for shuttling transversely across said compartment and alternately aligning up with either of said stationarily mounted tracks; a rotary rack adapted to receive a plurality of elongated missiles which are disposed annularly about the rotary axis of said rack; said rotary rack having a support carriage and means mounted on the base of said carriage for operatively engaging a set of said dual-rail tracks for movement therealong; a supply duct mounted centrally overhead, down the longitudinal length of said compartment for housing both conditioned air flow and electrical power; and an umbilical cord interconnecting said rotary rack through a slide fitting engagement with said supply duct for continuous tapping-off of conditioned air and electrical power during movement of said rotary rack along the floor mounted track system.

4,208,950

HYDRAULIC POWER BRAKE BOOSTER

Gene P. Baynes, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1978, Ser. No. 947,417
Int. Cl.[2] F15B *9/10*
U.S. Cl. 91—369 B **1 Claim**



1. In a hydraulic power brake booster having a housing, a

power piston reciprocably movable in said housing and defining therewith a power pressure chamber, and valve means for controlling the power pressure level in said chamber for actuating and releasing said booster, said valve means including a reciprocably movable input valve control element and a cooperating valve element, the improvement comprising:

an input rod extending into said power pressure chamber and reciprocably movable through a wall of said housing and axially aligned with said input valve control element and axially movable relative thereto;

a sleeve around a portion of said input rod and extending through the wall of said housing so that one sleeve end is exposed to pressure in said power pressure chamber and the other sleeve end is exposed to atmospheric pressure;

a plurality of radially extending reaction ratio levers having their radially inner ends mounted on said input control valve element for limited pivotal movement;

an annular and generally conical lever support member in said power pressure chamber and having its inner periphery supported by and axially movable with said sleeve and having its outer periphery extending axially relative to its inner periphery and supporting the outer ends of said radially extending reaction ratio levers;

a fulcrum member having its inner periphery abutting and reacting on said input rod and its outer periphery engaging said levers intermediate their ends and providing fulcrum points on which said levers are pivotable;

first spring means operatively reacting on said sleeve and said fulcrum member and urging said lever support member and said sleeve axially apart from said fulcrum member and urging said fulcrum member into continuous engagement wih said levers at said fulcrum points;

and second spring means urging said input rod and said input valve control element axially apart;

said input rod being moved during power actuation of said booster and acting through said fulcrum member and said lever support member and said levers to move said input control valve element at a higher rate than the movement of said input rod to actuate said valve means and cause power pressure to increase in said power pressure chamber to power actuate said booster, the power pressure in said chamber acting on said sleeve to inhibit axially inward movement of said sleeve and said lever support member;

said input rod moving said fulcrum member to pivot said levers on said input valve control member to move said lever support member and said sleeve at a higher rate than the movemeat of said input rod when no power pressure increase occurs upon actuating movement of said input rod, until said input rod abuts and moves said input valve control member concurrently therewith to establish a mechanical force transmittal path through said booster.

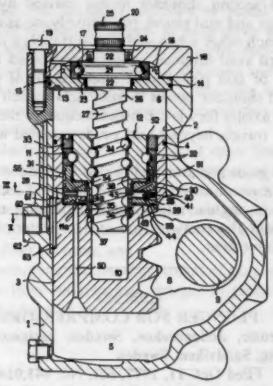
4,208,951

POWER STEERING MECHANISM

Juan S. Bacardit, Bacelona, Spain, assignor to Bendiberica, S.A., Barcelona, Spain

Filed Jun. 5, 1978, Ser. No. 912,626
Claims priority, application Spain, Jun. 11, 1977, 459710
Int. Cl.[2] F15B *13/04*
U.S. Cl. 91—422 **5 Claims**

1. Power steering mechanism for a vehicle comprising a housing defining a cavity in which is rotatably mounted a rotary steering control member, a driving piston connected to a member in the steering gear of the vehicle, the piston separating two pressure chambers of the housing, said driving piston also including a bore having an open end through which axially extends a screwthreaded spindle of the rotary steering control member, characterized in that a disc-shaped distributing chamber is defined in said driving piston, said chamber being coaxial with the spindle and being formed by a surface having alternating large and small radii, said piston supporting a nut element in screwthreaded engagement with said screwthreaded spindle, said nut element being prevented to move axially with respect to the piston, and allowed to rotate within a limited angular range, a star-shaped rotor comprising a central portion from which extends a plurality of radial arms rotatably mounted in the disc-shaped member; said plurality of radial arms sealingly and slidably engaging and cooperating with said alternating large and small radii surface to form a first set and a second set of distributing chambers respectively connected to the first and second pressure chambers of the



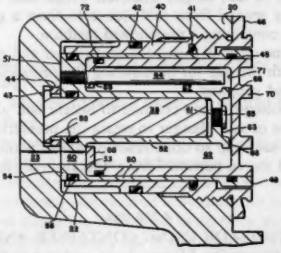
housing, said star-shaped rotor being connected in rotation with the nut element, fluid inlet and outlet passages respectively connectible to the high pressure side and the low pressure side of a pressure source being provided in said driving piston to communicate with the disc-shaped chamber through respective openings, said openings cooperating with the arms of the rotor to control distribution of the fluid pressure to the first and second pressure chambers as a function of the relative angular position of the piston and rotor.

4,208,952

PISTON WITH EXTENDED AXIAL TRAVEL

Richard J. Ditlinger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 754,134, Dec. 27, 1976, abandoned. This application May 22, 1978, Ser. No. 908,188
Int. Cl.[2] F01B *9/02*
U.S. Cl. 92—13 **8 Claims**



1. Fluid pressure actuated piston assembly with extended travel comprising:

a casing having a cavity therein;

cylinder means slidably disposed within said cavity and responsive to a pressurized fluid supplied to said cavity, said cylinder means having a first end wall with front and rear annular surface areas exposed to said pressurized fluid, and first and second spaced-apart coaxial cylinders

connected to said first end wall, said second cylinder having a second end wall;

a first guide rod carried by said casing and projected through a hole in said first end wall for reducing the amount of rear annular surface area of said first end wall so as to hydraulically balance the axial movement of said cylinder means inside said cavity;

a piston slidably retained in said first cylinder and responsive to said pressurized fluid in said cavity;

first and second shoulder means carried by said second cylinder and said piston, respectively, so as to be engaged with each other when said piston travels a predetermined forward axial distance, wherein continued forward axial travel of said piston after engagement of said first and second shoulder means thereby acts to pull said cylinder means axially forward a distance equal to the distance said piston travels beyond said predetermined axial distance; and

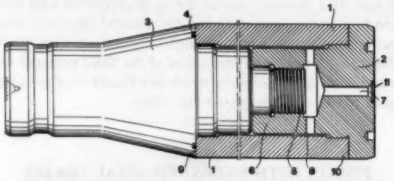
a second guide rod attached to said first end wall for engaging said piston to maintain said first and second shoulder means in angular alignment and thereby assure the engagement therebetween on said predetermined forward axial movement.

4,208,953

PLUNGER FOR COMPRESSORS

Milinko Prusic, Johanneshov, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 11, 1977, Ser. No. 841,014
Claims priority, application Sweden, Oct. 15, 1976, 7611449
Int. Cl.[2] F16J *1/02, 1/06*
U.S. Cl. 92—193 **5 Claims**



1. A plunger for compressors comprising:

a steel carrier;

a rigid hollow sleeve portion made of cemented carbide extending around a portion of said carrier assembly and resting between longitudinally spaced shoulders of said carrier;

a portion of said carrier disposed within said sleeve being radially spaced from said sleeve to form a gap therebetween containing a pressurized medium;

at least one channel formed in said carrier and communicating with the gap for introducing the pressurized medium into said gap; and

means closing-off said channel to isolate said gap from the exterior of said plunger to retain the pressurized medium within said gap to counteract pressures acting exteriorly on said sleeve portion during operation of the plunger.

4,208,954

METHOD FOR USING CONTAINER AND LID

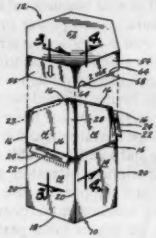
William L. Chase, Des Moines, Iowa, assignor to International Drum Corporation, Des Moines, Iowa

Filed Jun. 13, 1978, Ser. No. 915,016
Int. Cl.[2] B65D *5/12*
U.S. Cl. 93—36 M **1 Claim**

1. A method for using a polygonal container and lid, said container having polygonal upper edges, and locking flaps extending from at least some of said upper container edges, said locking flaps extending downwardly on the outside of said container and having downwardly presented shoulders, said lid having a top wall and sidewalls, with bottom edges, lid locking flaps extending from said lid sidewall bottom edges, said lid locking flaps being folded upwardly inside said lid sidewalls and having upwardly presented edges spaced downwardly from said top wall, said method comprising:

placing said lid over said open upper end of said container;

depressing said lid to a point wherein a first portion of said lid locking flaps retentively engage said container locking flaps to lock said lid on said container;



removing said lid by severing said first portion of the lid locking flaps from said lid and lifting said lid upwardly from said container;

rotating said lid to a position wherein said second portion of said lid locking flaps still remaining on said lid are in registered alignment above said container locking flaps;

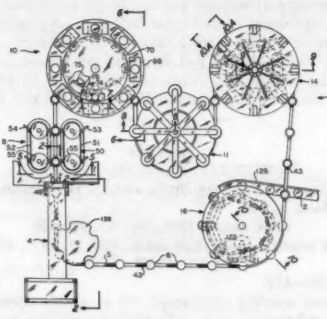
depressing said lid over said container to a point wherein said second portion of lid locking flaps retentively engage said container flaps to secure said lid to said container.

4,208,955

CONTAINER MANUFACTURING APPARATUS AND METHOD

Calvin K. Doll, and Phillip A. Tyrrell, both of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1978, Ser. No. 872,143
Int. Cl.[2] B31B *17/02*
U.S. Cl. 93—44 **32 Claims**



1. A method of forming a container, said method including:

sequentially feeding individual sidewall blanks having side marginal portions from a storage magazine to a pickup station adjacent a circuitous path defined by a continuously moving endless conveyor carrying a plurality of mandrels;

heating said side marginal portions of said sidewall blanks during said feeding step;

sequentially moving each of the mandrels into engagement with a respective sidewall blank at the pickup station;

partially wrapping a thus engaged sidewall blank about the respective mandrel;

completely wrapping a thus partially wrapped sidewall blank about the respective mandrel with continuously moving wrapping wing means and overlapping said side marginal portions of the sidewall blank;

bonding together the thus overlapped side marginal portions forming an open ended tubular sidewall;

sequentially forming a plurality of end closure members by a respective one of a plurality of first means carried on a continuously rotating first turret;

sequentially inserting each thus formed end closure member into an open end of a respective thus formed tubular sidewall during continuous movement of the respective mandrel along the defined path;

heating at least portions of the tubular sidewalls and respective end closure members, wherein said heated portions of the tubular sidewall and end closure members are sequentially heated by a respective one of a plurality of second means carried on a continuously rotating second turret;

sequentially bonding the thus inserted and heated end closure members to the respective heated tubular sidewalls to form containers;

sequentially removing each of the thus formed containers from the respective mandrel; and

sequentially returning each of the thus emptied mandrels to the pickup station for engagement with another respective sidewall blank.

4,208,956

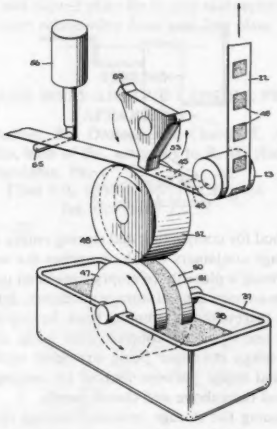
GLUE TRANSFER APPARATUS FOR CIGARETTE FILTERS

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Division of Ser. No. 790,949, Apr. 26, 1977, Pat. No. 4,174,720. This application Jun. 7, 1978, Ser. No. 913,267

Int. Cl.[2] A24C *5/50*

U.S. Cl. 93—77 FT **6 Claims**



1. An apparatus for forming a multi-sectional particulate-containing filter comprising

a conveyor for moving a stream of plug wrap paper through a predetermined path;

means for placing increments of glue on one side of the stream of plug wrap paper at predetermined spacings from each other;

said means including

a glue pot containing a reservoir of glue;

a first transfer roll rotatably mounted over said glue pot and having a circumferential surface projecting into said pot and a circumferential groove in said surface to receive glue therein;

a second transfer roll rotatably mounted adjacent said first transfer roll, said second transfer roll having a circumferential surface facing said surface of said first transfer roll to receive glue from said groove of said first transfer roll and being spaced from said path; and

a third roll rotatably mounted adjacent said second transfer roll for passage of the stream of plug wrap paper therebetween, said roll having a plurality of radial spokes to periodically deflect the stream of plug wrap paper from said path about said second roll whereby during passage of the plug wrap paper between said second and third rolls said third roll periodically deflects the plug wrap paper and said second roll places increments of glue thereon in spaced relation;

means for placing a sequence of spaced apart filter sections onto the moving stream of plug wrap paper with alternate filter sections being disposed on the increments of glue;

means for depositing charges of particulate filter material onto the moving stream of plug wrap paper between adjacent filter sections; and

means for wrapping the moving stream of plug wrap paper about the filter sections and charges of particulate filter material to form an endless rod.

4,208,957

AUTOMATIC FILTER-TYPE COFFEE MAKER

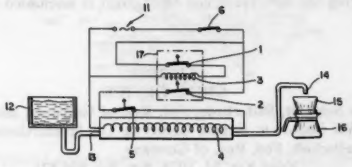
Hellmuth Bollman, Bad Homburg, and Ernst Heimrath, Neuenhaim, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,412

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722548

Int. Cl.[2] A47J *31/54*

U.S. Cl. 99—282 **7 Claims**



1. An apparatus for making a beverage such as coffee, said apparatus comprising:

a reservoir adapted to hold a supply of a liquid for making the beverage;

a holder for retaining a supply of dry material combinable with said liquid to make said beverage;

a conduit extending between said reservoir and said holder;

heater means along said conduit activatable for heating said liquid and displacing the heated liquid from said reservoir to said holder, whereby the heated liquid combines with the material in said holder to form said beverage; and

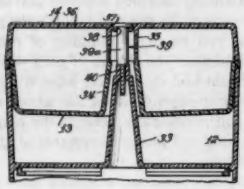
control means connected to the heating and displacing means for sequentially activating same to displace only a portion of the liquid from said supply into said holder, for thereafter temporarily deactivating said heater means to arrest the flow of said liquid through said heater means, and for thereafter reactivating said heater means to displace the remainder of said liquid from said supply into said holder.

4,208,958

BEVERAGE BREWER HOUSING STRUCTURE

Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Jan. 26, 1976, Ser. No. 652,568
Int. Cl.[2] A47J *31/00*
U.S. Cl. 99—300 **7 Claims**



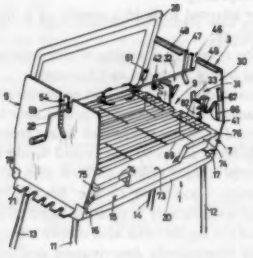
1. In a beverage brewer wherein water is heated to brew a beverage, an outer housing structure comprising: a water heating tank having a lower wall portion defining a lower portion of said outer housing structure, said heating tank further having an upper wall portion defining a midportion of said outer housing structure and provided with an upwardly projecting tongue; a base supporting the tank lower portion; a basin overlying said tank for receiving poured-in cold water and delivering the cold water downwardly into the tank to be heated therein, said basin having a peripheral wall portion defining an upward continuation of said tank upper wall portion defining an upper portion of said outer housing structure and having a downwardly opening groove receiving said tank tongue, and an upwardly projecting tongue; a basin cover overlying said basin and having a sidewall defining an upward continuation of said basin peripheral portion and defining an uppermost portion of said outer housing structure, said cover sidewall defining a downwardly opening groove receiving said basin tongue, said base, tank, basin, and basin cover cooperatively defining substantially a complete outer housing of the beverage brewer whereby the basin and basin cover are retained against lateral displacement relative to the tank by said cooperating tongues and grooves; and means for releasably securing the tank, basin, and basin cover in assembled relationship.

4,208,959

GRILL DEVICE

Klaus Schmidt, Ritterhude, Fed. Rep. of Germany, assignor to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,471
Int. Cl.[2] A47J *37/07*
U.S. Cl. 99—421 HV **10 Claims**



1. An improved grill device comprising

a base including a baseplate, and two sideplates extending upwardly from said baseplate,

a spit,

spit support means for locating said spit on a horizontal axis relative to said base,

at least one coalbox swingable on a horizontal axis relative to said base, said spit axis being generally parallel to said coalbox swing axis, and

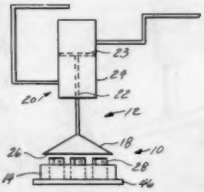
coalbox support means partially carried by said coalbox and partially carried by said sideplates for locating said coalbox in one of a vertical and a horizontal position as selected by the user, said coalbox support means including a stubshaft mounted on one of said coalbox and said sideplate, and a cradle mounted on the other of said coalbox and said sideplate, said stubshaft having a flat surface thereon cooperable with a flat surface of said cradle for holding said coalbox in at least said vertical position, said stubshaft axes at each end of said coalbox defining a horizontal pivot axis adjacent one side of said coalbox, said coalbox support means being operative to automatically lock said coalbox in a vertical position with said flat surfaces of said stubshaft and cradle in engagement in response to swinging movement of said coalbox from said horizontal position to said vertical position, and said coalbox support means being operative to automatically secure said coalbox in said horizontal position upon location of said coalbox in said horizontal position.

4,208,960

COMPACTOR

Dennis R. Leitgeb, 317 Woodbridge, Grand Blanc, Mich. 48439

Filed Apr. 27, 1979, Ser. No. 33,860
Int. Cl.[2] B30B *1/32, 9/32*
U.S. Cl. 100—35 **6 Claims**



6. A method for compacting and storing empty cans in open topped storage containers which comprises the steps of:

(a) positioning a plurality of empty cans in an upright orientation in an open topped storage container, dimensioned to receive therewithin a ramming head, having a flat bottom surface and operably coupled with linear drive means, each storage container being provided with means on upper and lower portions thereof for nesting containers emplaced thereabove and therebeneath,

(b) positioning the storage container having the cans positioned upright therewithin beneath the ramming head,

(c) operating the linear drive means to drive the ramming head down to engage the tops of the cans and to crush the cans downward into the storage container to a predetermined height therein, preserving the tops of the cans substantially intact,

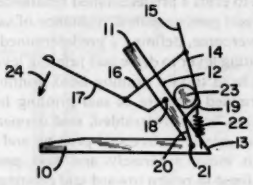
(d) operating the linear drive means to raise the ramming head up, out of the storage container, and

(e) stacking the storage container with other storage containers, aligning the nesting means of the storage container to nest with the storage containers deployed thereabove or therebeneath.

4,208,961
CAN COMPRESSOR

Tadashi Okajima, 1-12-6, Taishibashi, Asahi-Ku-Osaka, Japan

Filed Dec. 13, 1978, Ser. No. 969,181
Int. Cl.[2] B30B 1/04, 7/00
U.S. Cl. 100—233 4 Claims



1. In a compressor for cans and the like of the type having a first and second compressor plate, pivot means for allowing one of said plates to move between open and closed positions against the other plate and means for moving said plate between said open and closed positions, the improvement comprising:

(a) a base support member;

(b) said first plate mounted on an inclined plane and rigidly attached to said base support member;

(c) said second pivotally attached to said base support member;

(d) a lever pivotally attached to said base support member;

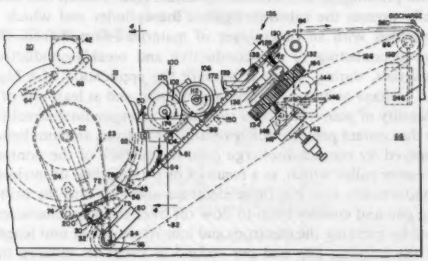
(e) an arm having ends respectively pivotally attached to said lever and said second plate, said arm and said lever limiting the maximum angular separation of said first and second plates to an acute angle, and permitting the minimum angular separation of said first and second plates to be substantially zero; and

(f) spring biasing means attached to said base support member and said second plate for urging said second plate into spaced apart relationship from said first plate.

4,208,962
ON-END AND WRAP-AROUND CAPSULE PRINTING APPARATUS

Charles E. Ackley, Sr., Oreland, and Charles E. Ackley, Jr., Philadelphia, both of Pa., assignors to R. W. Hartnett Company, Philadelphia, Pa.

Filed Feb. 6, 1978, Ser. No. 875,454
Int. Cl.[2] B41F 17/36
U.S. Cl. 101—35 18 Claims



1. Capsule turning and printing apparatus of the type adapted to imprint indicia on at least two different positions of a generally cylindrically shaped pharmaceutical capsule comprising:

(a) hopper means adapted to receive a multiplicity of capsules in random arrangement;

(b) capsule transport means adjacent said hopper to receive capsules therefrom and transport said capsules along a predetermined path;

(c) wrap-around printing means adjacent said transport means and downstream from said hopper for imparting a desired indicia around each of said capsules as each capsule is moved along said predetermined path;

(d) on-end printing means adjacent said transport means and downstream from said hopper for imparting a further desired indicia to an endwise portion of each said capsule as each capsule is moved along said predetermined path;

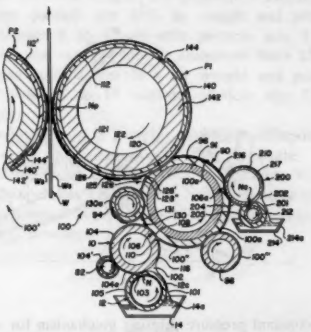
(e) means for ejecting said capsules from said transport means located downstream from both said printing means (c) and (d); and

(f) said capsule transport means comprising a plurality of capsule carrier means for carrying said capsules along said predetermined path, each said capsule carrier means being composed of a relatively slippery material to allow spinning of each capsule as it is contacted by said wrap-around printing means (c) and being provided with an open endwise portion to facilitate printing upon said capsules by said on end printing means (d).

4,208,963
NEWSPAPER PRINTING SYSTEM

Harold P. Dahlgren, Dallas, Tex., assignor to Dahlgren Manufacturing Company, Dallas, Tex.

Continuation-in-part of Ser. No. 897,262, Apr. 18, 1978. This application May 24, 1978, Ser. No. 909,184
Int. Cl.[2] B41F 7/26, 7/36, 7/40; B41L 25/14
U.S. Cl. 101—141 13 Claims



1. A printing system wherein low viscosity ink and dampening fluid are applied to opposing lithographic printing plates which simultaneously engage opposite sides of a web, the improvement comprising: support means; first and second plate cylinders; a lithographic printing plate on each of said plate cylinders; means rotatably securing said plate cylinders to said support means such that said lithographic printing plates engage opposite sides of a web moving between said plate cylinders; first and second form rollers; means urging said first and second form rollers into pressure indented relation with said first and second lithographic printing plates; first and second inkers and dampeners arranged to continuously apply a metered film of ink and dampening fluid over said first and second form rollers directly to said lithographic printing plates, each of said inkers comprising: an ink metering means; an ink transfer roller having an oleophillic ink receptive surface urged into pressure relation with a respective one of said form rollers to form an ink transfer nip; means supporting said ink metering means and said ink transfer roller to maintain a pressure relationship therebetween to form an ink metering nip between adjacent surfaces of the ink metering means and the ink transfer roller; means to supply ink to said ink transfer roller such that the ink metering means produces a continuous

quantity of ink on the surface of said ink transfer roller; speed control means to control the surface speed of said ink transfer roller relative to the surface speed of a respective one of said form rollers to control the thickness of a newly metered film of ink on a respective one of said form rollers; an ink storage roller supported in rotative contact with the surface of the film of ink on a respective one of said form rollers which has just moved from the printing plate and prior to the ink transfer nip, said ink storage roller being adapted to substantially equalize the surface of the irregular film of ink; and each of said dampeners comprising: a hydrophilic dampening fluid transfer roller adapted to apply a uniform film of dampening fluid to the surface of the newly metered film of ink on the surface of a respective one of said form rollers; means rotatably supporting said hydrophilic dampening fluid transfer roller in pressure indented relationship with a respective one of said form rollers; dampening fluid metering means; and means to supply dampening fluid to said hydrophilic dampening fluid transfer roller such that the dampening fluid metering means produces a smooth, uniform, continuous film of dampening fluid on the surface of the hydrophilic dampening fluid transfer roller.

4,208,964

CONSTANT PRESSURE PRINTING MECHANISM FOR HAND LABELER

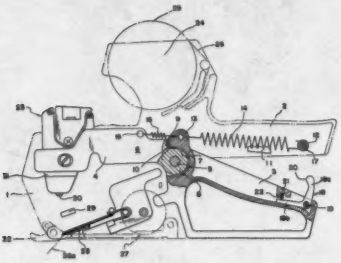
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,408

Claims priority, application Japan, Apr. 20, 1977, 52/044556; May 16, 1977, 52/055286

Int. Cl.[2] B41J *5/00*

U.S. Cl. 101—291 **40 Claims**



1. A constant pressure printing mechanism for use with an apparatus for imprinting a label, or the like, comprising:

a printing platen for supporting a label, or the like, to be imprinted;

an actuating lever movable between a released position and a squeezed position; said actuating lever being divided into an operating lever and a separate printing lever; said operating and said printing levers being pivotally connected together;

a printing head connected to said printing lever and movable thereby between an inoperative position, wherein said printing head is apart from said platen, when said actuating lever is at said released position, and a printing position of said printing head against said platen, when said actuating lever is at said squeezed position thereof;

biasing means for biasing said operating and said printing levers to pivot with respect to each other and for normally biasing said printing head toward said inoperative position;

cooperating abutting means on said printing lever and on said operating lever for being engaged under the influence of said biasing means and thereby for holding said printing lever and said operating lever so that they move together, to said actuating lever squeezed position, in opposition to the bias of said biasing means;

snap means for engaging said actuating lever for resisting motion of said printing lever toward said printing head printing position, which such motion of said printing lever is caused by motion of said actuating lever to said squeezed position thereof; said snap means being constructed such that when said actuating lever is fully moved to said squeezed position thereof, said snap means is overridden in a snap manner; said snap means being adapted to exert a predetermined resistance to being overridden; said predetermined resistance of said snap means, when overcome, defining a predetermined pressure upon said printing lever to drive said printing lever to move said printing head to said printing head printing position at a predetermined pressure of said printing head; upon said snap means being overridden, said cooperating abutting means are caused to free said printing and said operating levers to move separately and said printing lever is thereby freed to return toward said printing head inoperative position under the bias of said biasing means.

4,208,965

METHOD FOR ELECTROSTATIC ASSISTANCE IN PRINTING PROCESSES, AND PRINTING MACHINES HAVING ELECTROSTATIC SUBSTRATE CONTACT PRESSURE

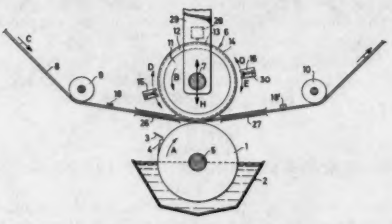
Helmut Eichler, Burgunderstr. 13, D-7601 Durbach, and Franz Knopf, Meister-Erwinstr. 18a, D-758 Bühl, both of Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,801

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713334; Apr. 7, 1977, 2715766

Int. Cl.[2] B41F *5/04;* **G05F** *1/00*

U.S. Cl. 101—426 **29 Claims**

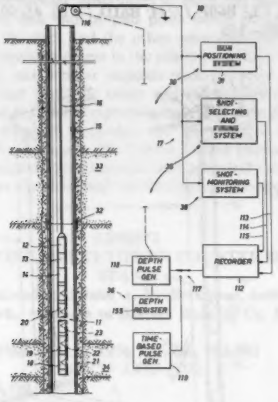


1. Method for electrostatic assistance of the printing process in a printing machine, in which method a non-conductive printing substrate is passed between a printing cylinder coated with printing ink and a contact pressure roller which mechanically presses the substrate against the cylinder and which is provided with an outer layer of material selected from the group consisting of non-conductive and weakly-conductive materials, during which procedure the application of a high d.c. voltage between the printing cylinder and at least one of a plurality of point electrodes running in a longitudinal direction to the contact pressure roller results in electrons and ions being sprayed by corona discharge onto the surface of the contact pressure roller which, as a result of its rotating and its intrinsic conductivity, conveys these electrons and ions into the printing gap and enables them to flow off over this gap, characterized by spraying the electrons and ions required per unit length of the printing gap and per second in order to achieve the desired printing result over the discrete electrode points distributed along the contact pressure roller and being acted upon by said d.c. voltage, in which process the current flowing to discrete groups of said electrode points is decoupled, and the current flowing through each electrode point in the case of a short circuit, is limited to a value which is less than the critical break-down current for the atomsphere surrounding said machine.

4,208,966
METHODS AND APPARATUS FOR SELECTIVELY OPERATING MULTI-CHARGE WELL BORE GUNS

Herbert J. Hart, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,161
Int. Cl.[2] E21B *43/116*; G01R *31/02*
U.S. Cl. 102—20 81 Claims



80. A method for monitoring the operation of selectively-detonatable explosive devices dependently supported in a well bore by a suspension cable and comprising the steps of:

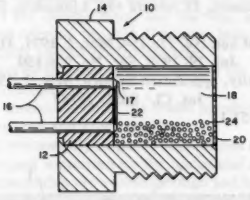
detonating one of said explosive devices and contemporaneously generating an amplitude signal representative of the magnitude of the explosive forces produced by said one explosive device; and

generating in response to said amplitude signal a measurement signal below the surface for transmission to the surface having a time duration functionally related to said amplitude signal to provide at least one indication representative at the surface of at least the relative magnitude of said explosive forces.

4,208,967
SQUIB DESIGN

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1978, Ser. No. 905,833
Int. Cl.[2] F42B *3/12*
U.S. Cl. 102—28 EB 3 Claims



1. An electrically initiated squib allowing reduced loading and assembling procedures while attaining improved reliability for igniting, said electrically initiated squib comprising in combination:

(i) a pair of electrically insulated lead members positioned in a spaced apart relationship and extending through an insulating plug member, said lead members having terminated ends outside said insulating plug member;

(ii) a bridgewire fastened between said terminated ends of said lead members, said bridgewire constructed of a bimetallic composite selected from the group consisting of palladium and aluminum, platinum and aluminum, and ruthenium-palladium alloy and aluminum, said bridgewire having the capability of igniting an appropriate charge loosely confined within a holder member, said charge being spaced from said bridgewire and within a throw pattern of said bridgewire; and,

(iii) a housing member for containing said insulating plug member, said lead members, and said bridgewire, said housing member and said plug member when in combination additionally defining a holder member that contains a predetermined quantity of said appropriate charge as a loose, easily-ignitable composition within the throw pattern of said bridgewire after said bridgewire is brought to its ignition temperature by the application of electrical current, said ignition temperature causing a violent exothermic reaction that is accompanied by a deflagration or a throwing out of the high temperature constituents of said bimetallic bridgewire, said easily-ignitable composition being a composition selected from the group of easily-ignitable compositions specified under pyrotechnic groups A-C as follows:

Pyrotechnic group A: metal fuel-oxidizer, composition 1: magnesium 60% by weight and polytetrafluoroethylene 40% by weight; composition 2: boron 23.7%±2% by weight, potassium nitrate 70.7%±2% by weight, and binder 5.6% by weight; composition 3: zirconium 10 microns particle size 45% by weight and potassium perchlorate 6 to 17 microns particle size 55% by weight; and composition 4: aluminum flake 17 to 44 microns particle size 45% by weight and potassium perchlorate 6 to 17 microns particle size 55% by weight;

Pyrotechnic group B: primary explosive, composition 1: lead azide; and composition 2: lead styphnate;

Pyrotechnic group C: propellants, composition 1: double-base propellants; composition 2: single-base propellants; composition 3: composite propellants; and composition 4: black powders.

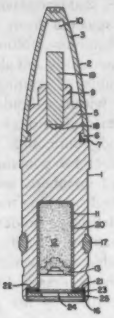
4,208,968
PROJECTILE FOR PRACTICE AMMUNITION

Günter Hübsch, Kalchreuth, and Rudolf Stahlmann, Fürth, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 2, 1977, Ser. No. 821,249
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639884
Int. Cl.[2] F42B *11/18*
U.S. Cl. 102—92.7 28 Claims

1. A projectile for training ammunition comprising an elongated projectile body means having a front end portion and a rear end portion, and dummy detonator means constructed as a hollow body with substantially longitudinally extending thin walls, the dummy detonator means being joined to the front end portion of the projectile body means, the dummy detonator means being formed of a synthetic resin and remaining firmly joined to the projectile body means means throughout the flight path of the projectile upon firing while exhibiting substantially no change in shape during firing and during flight so that the projectile exhibits a flight characteristic and target accuracy of a corresponding live ammunition, the projectile body means being provided with a forwardly directed lug-shaped stem member having an outer diameter smaller than the

caliber of the projectile and larger than 0.7 times the caliber of the projectile, at least a portion of the thin walls of the dummy



detonator means extending over the outside surface of the lug-shaped stem member.

4,208,969

SUSPENDED RAIL STRUCTURE ESPECIALLY FOR MONORAIL VEHICLES

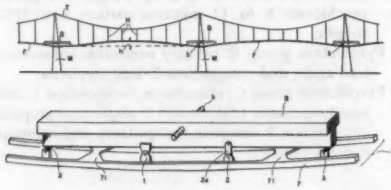
Rudolf Baltensperger, Alte Kaiserstuhlstr. 157, CH 8181 Höri, Switzerland, and Hans B. Pfister, Frohhaldenstrasse 20, CH 8180 Bülach, Switzerland

Filed May 17, 1978, Ser. No. 906,854

Claims priority, application Switzerland, May 17, 1977, 6131/77

Int. Cl.[2] E01B *25/22*

U.S. Cl. 104—111 **10 Claims**



1. A suspended-track assembly for a monorail vehicle or the like which comprises:

at least two spaced-apart masts;

at least one suspension cable spanning said masts;

a plurality of suspenders secured to said cable and spaced apart therealong, said suspenders hanging downwardly from said cable;

a rail upon which said vehicle is adapted to ride connected between said masts, said rail being affixed to said suspenders and having an upwardly bowed configuration in an unloaded state;

respective guide beams pivotally connected to each of said masts and bearings upon said rail for rounding out the configuration thereof proximal to said masts, said beams each having a bearing pin, each mast being formed with a housing and a bearing block in said housing engaging the respective pin, said bearing block and said pin defining a pivotal axis perpendicular to the axis of said rail; and

elastomeric means supporting said block in the respective housing for enabling 5 degrees of freedom of movement of said beam including:

(a) a lateral displacement of said guide beam parallel to the axis of said pin,

(b) an upward and downward movement,

(c) torsion about the longitudinal axis,

(d) torsion about the vertical axis, and

(e) pivotal movement about the axis of said pin.

4,208,970

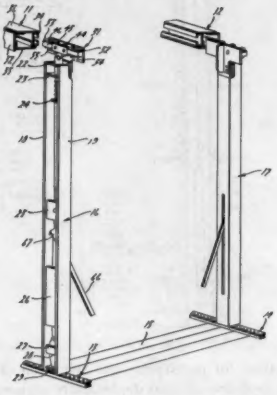
MOVABLE LADING BRACING STANCHIONS FOR FREIGHT CARS

Tibor Matyas, Woodridge, Ill., assignor to Evans Products Company, Chicago, Ill.

Filed Dec. 19, 1977, Ser. No. 861,868

Int. Cl.[2] B60P *17/14*; B61D *17/10, 45/00, 49/00*

U.S. Cl. 410—153 **11 Claims**



1. A freight bracing device for bracing freight within a cargo area defined by a freight transporting vehicle body having at least one track extending along at least a portion of the length of the vehicle body in the cargo area spaced inwardly of the side of the vehicle body, said freight bracing device comprising a stanchion extending vertically in said cargo area and having a vertically extending bracing surface extending transversely across said cargo area for directly engaging and restraining freight which freight has a substantially greater width than the transverse dimension of said stanchion bracing surface, and stanchion bracing surface extending transversely for substantially less than one-half of the width of said cargo area, means carried by said stanchion for supporting said stanchion for movement along said cargo area on said track to preselect cargo bracing areas, and locking means having selectively engageable surfaces for locking said stanchion in selected bracing positions relative to said cargo area.

4,208,971

LOADING PALLET

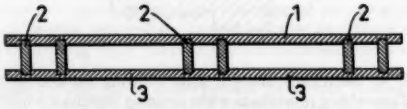
Nils G. W. Persson, 19 Anders väg, Ljungsbro, Sweden (S-590 60)

Continuation of Ser. No. 773,154, Mar. 1, 1977. This application Jul. 19, 1978, Ser. No. 926,150

Claims priority, application Sweden, Mar. 2, 1976, 7602952

Int. Cl.[2] B65D *19/34*

U.S. Cl. 108—51.1 **2 Claims**



1. A throw-away loading pallet made from fiber board and having cardboard tubular supports serving as feet comprising a flat fiber board deck,

a plurality of rows of blind annular milled recesses formed in the underside of said deck, the depth of the recesses exceeding one-half the deck thickness,

a fiber board reinforcing strip for each said row of recesses in alignment therewith,

an annular milled recess formed in the top side of said strips opposite each of said recesses in the deck and having like dimensions to said deck recesses,

a plurality of tubular posts open at each end and made of cardboard, one end of said posts being pressed into a recess in the deck and the other open end being pressed into the opposing recess in the reinforcing strip to the full depths of said annular recesses such that said deck and strip contact both the outer and inner surfaces of said tubular posts at their respective ends over a length exceeding said one-half thickness, and the ends of said posts contact the surface in the bottom of said recesses, and

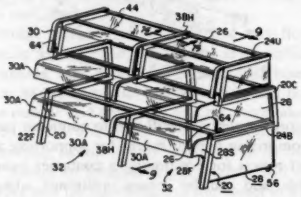
all said contact surfaces between said posts and the receiving recesses in the deck and reinforcing strips being glued.

4,208,972

SELF-SERVING MULTI-TIERED COUNTER DISPLAY STAND

Raymond J. Arend, and John A. VerBerkmoes, both of Grand Haven, Mich., assignors to Bastian Blessing Co. Inc., Phoenix, Ariz.

Filed Mar. 2, 1978, Ser. No. 882,803
Int. Cl.² A47B *3/00*
U.S. Cl. 108—111 **9 Claims**



1. A rigidly constructed self-service multi-tier food display and dispensing stand for resting movably on a flat top supporting surface,

each tier including two inverted L-shaped frame members collectively defining in part a plurality of pairs of integrated horizontally spaced parallel horizontal arms and horizontally spaced vertically disposed legs in which the top end of each leg is terminally secured rigidly to one end of a horizontal arm and the arms in a lower tier are rigidly secured at their other ends to the lowest ends of the legs of the tier above it,

said legs at the front defining a front access opening through the space between them above the flat top supporting surface of the display stand and the rear legs defining a rear access opening through the space between them and the vertically spaced horizontal arms,

means carried by the lower frame member for supporting its arms in horizontal position,

strip means interconnecting the frame members for holding them in spaced and erect relation,

transparent horizontally disposed shelf means rigidly carried normal to and supported on the horizontal arms, defining storage spaces that are visible through and below them for storing and displaying food resting on said shelf means and flat top and being horizontally available for self-service between the front legs, and

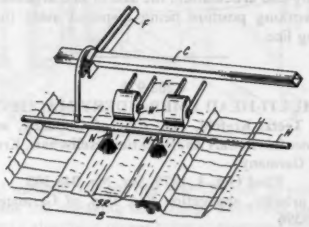
transparent extension means supported on each pair of said horizontal arms co-planar with said shelf means and extending horizontally above and over-hanging said access opening and extending forwardly and downwardly beyond said front legs a substantial distance substantially parallel with the legs in front of said opening at an inclination horizontally closing at least a major portion of the upper half of said access opening to protect vertically and horizontally the food in said space from sneezes of self-serving patrons while providing adequate but limited opening areas for removal of food bearing dishes slid from said storage space.

4,208,973

SOIL ANTI-CRUSTANT

William K. Baer, Glen Ellyn; Ralph R. Nielsen, Oak Lawn, and Joseph F. Vartiak, Naperville, all of Ill., assignors to Nalco Chemical Company, Oakbrook, Ill.

Filed Jan. 12, 1979, Ser. No. 2,976
Int. Cl.² A01G *1/00*; A01C *5/06*
U.S. Cl. 111—1 **4 Claims**



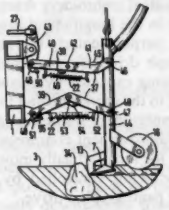
1. A method of reducing soil encrustation in a seed bed by spraying the seed bed, after planting the seeds, with an effective amount of (a) polydiallyl dimethyl ammonium chloride or (b) a polymer of dimethylamine/epichlorohydrin dissolved in water.

4,208,974

SEED DRILL HAVING PARALLEL GUIDE MEANS FOR THE MOVABLE SHANK

Heinz Dreyer, Hasbergen-Gaste, and Benno Wiemeyer, Osnabrück, both of Fed. Rep. of Germany, assignors to Amazonen-Werke, Hasbergen-Gaste, Fed. Rep. of Germany

Filed Sep. 2, 1977, Ser. No. 830,380
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640749
Int. Cl.² A01C *5/06, 7/20*
U.S. Cl. 111—85 **15 Claims**



1. A seed drill having a frame with knife hoes mounted thereon, the knife hoes being movable in a vertical plane and each having two laterally projecting wings bent downwardly toward one another, the outer edge of the wings merging forwardly together, each knife hoe having an upright strut supporting the leading point thereof, each knife hoe being disposed on a shank which is mounted on the frame with parallel guide means, means for adjusting the angle of the shanks with respect to the horizontal, with the shanks in the normal working position, the forward edge of each strut extending virtually vertically upward from the forward end of its

knife hoe and, at a distance of less than about 15 cm above the forward end of its knife hoe, passing through a bend into a slightly rising portion which extends to and is fastened to the shank, the parallel guide means having at least one articulation acting in a vertical plane, a stop limiting forward swinging movement of the knife hoe about the articulation, and at least one resilient element exerting a force on the knife hoe in the direction of the stop, and a gauge wheel for each knife hoe to limit the depth of penetration of the knife hoe into the soil, the gauge wheels being disposed to the rear of the knife hoes, each parallel guide means having two linkages situated one above the other, each being pivotingly joined to the frame at one end thereof, and to the shank at the other end thereof, straight connecting lines between the pivot axes of the upper and lower linkages being disposed about parallel to one another, at least one of the linkages comprising two linkage members joined together by said articulation, the axis of said articulation in the normal working position being disposed aside the straight connecting line.

4,208,975

MULTI-HEAD EMBROIDERY MACHINE

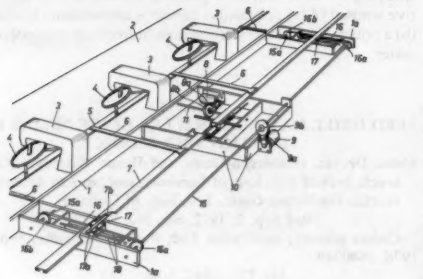
Wolfgang Teetz, Krefeld, Fed. Rep. of Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,202

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745396

Int. Cl.[2] D05C *5/00, 7/04*

U.S. Cl. 112—86 **8 Claims**



1. In a multi-head embroidery machine with a common carrier for the individual embroidery frames, the carrier being mounted moveably in the longitudinal axis of the embroidery machine as well as perpendicularly thereto and being adjustably by a pantograph drive, displacement movement of the pantograph drive being executed by a pantograph bar (which bar extends parallel to the carrier behind the sewing heads) are transmitted to the embroidery frame carrier by means of connection struts, the improvement comprising

first drive means for longitudinally moving the embroidery frames and for being controlled by data medium and directly by the pantographic drive,

second drive means for transversely moving the embroidery frames and for being controlled by data medium and directly by the pantographic drive,

both said drive means for feeding longitudinal and transverse displacement movements, respectively, to the pantograph bar,

said drive means including stepping motors, respectively, said stepping motors include first and second stepping motors, respectively,

said first stepping motor constitutes means for feeding the longitudinal movements to the pantograph bar at the longitudinal center of the pantograph bar,

said second stepping motor is centrally disposed relative to the length of the pantograph bar and constitutes means for feeding the transverse movements to the pantograph bar,

said second drive means further includes at least two intermediate drives operatively connected to said second stepping motor and engaging the pantograph bar at both sides of said second stepping motor at equal distances relative to the latter.

4,208,976

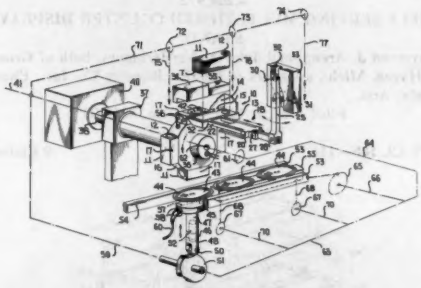
TAB APPLICATOR AND BONDING APPARATUS AND METHOD OF UTILIZING THE SAME

Ronald B. Stelter, Country Club Hills; Raymond P. Kulka, Chicago; John Florczak, Westchester; Peter A. Simonelis, Chicago, and Edward J. Fiala, Oak Lawn, all of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,412

Int. Cl.[2] B21D *51/44*

U.S. Cl. 113—121 A **9 Claims**



1. Apparatus for applying pull tabs to container panels, said apparatus comprising hopper means for supporting a stack of tabs, support means for positioning a container panel for receiving a tab, and transfer means positioned adjacent said hopper means and said support means for receiving a tab from said hopper means and transferring the same to a container panel, said transfer means being in the form of a transfer wheel mounted for rotation about an axis, said transfer wheel having at least one anvil for receiving a tab from said hopper means, said anvil corresponding in outline to an intended bond between one of said tabs and a container panel.

4,208,977

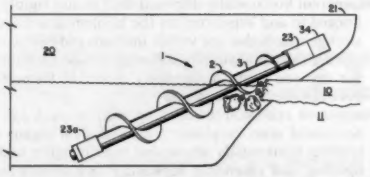
ICEBREAKING APPARATUS

Hans O. Jahns, Houston, and Joe D. Wheeler, Bellaire, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 816,573, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 684,324, May 7, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,737

Int. Cl.[2] B63B *35/08*

U.S. Cl. 114—40 **19 Claims**



1. A water-navigable vessel, including improved means for

failing ice in front of said vessel, said means comprising in combination:

a. ice-breaking bow means on said vessel adapted to impart a downward force upon said ice such that said ice breaks in flexure, and

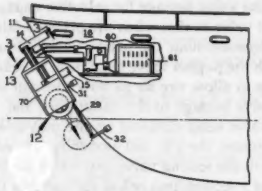
b. ice-gripping, pulling rotatable screw means rigidly supported from said bow means wherein said ice-gripping screw means is adapted and constructed to grip the upper portion of said ice to pull said bow forward and up onto said ice to fail said ice.

4,208,978

LATERAL THRUSTER FOR A WATER VESSEL

James D. Eller, 33 NW. 2nd St., Deerfield Beach, Fla. 33441

Filed Dec. 18, 1978, Ser. No. 970,529
Int. Cl.[2] B63H *25/46*
U.S. Cl. 114—151 **4 Claims**



1. A lateral thruster on a water vessel having a separate propulsion unit comprising:

a submersible pumping unit including an axial flow pump, a hydraulic motor driving said pump, and a unitary housing surrounding said pump and motor, said housing being open at its opposite axial ends and providing flow passage means outside said motor for passing water taken in at one of its axial ends and discharged at its opposite axial end by the pumping action of said pump driven by the motor;

support means for reciprocably mounting said submersible pumping unit on the outside of the vessel in a position to exert a lateral thrust on the vessel by said pumping action;

a source of pressurized hydraulic fluid on the vessel;

hydraulic lines operatively connecting said source to said hydraulic motor for operating the latter;

said support means including a cylinder rigidly mounted on the bow of the vessel by bracket means and extending downward therefrom toward the water;

a piston reciprocable in said cylinder and having a piston rod extending downward from the cylinder and operatively connected to the housing of the submersible pumping unit;

fluid pressure control means hydraulically coupled to said cylinder and said source for raising and lowering said piston in the cylinder to raise and lower the submersible pumping unit into and out of the water;

a pair of rigid rods extending downward along the outside of the vessel; and

guide sleeves attached to said housing of the submersible pumping unit and slidably mounted respectively on said rods for movement up and down along said rods.

4,208,979

PONTOON SPUDWELL SYSTEM

Kit L. Mack, Camarillo, and Clifford I. Skaalen, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1978, Ser. No. 916,412
Int. Cl.[2] B63B *35/44*
U.S. Cl. 114—264 **15 Claims**

1. A spudwell cooperating with a pipe pile and jacking means disposed for elevating a pontoon above a body of water comprising:

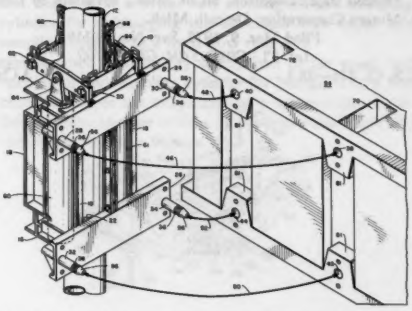
a. a guide structure having a pair of vertically aligned apertures therein through which said pipe pile extends;

b. means for removeably mounting said guide structure on said pontoon; and

c. motion compensation means including:

a housing rigidly affixed to said guide structure;

resilient energy absorbing means disposed in said housing; and



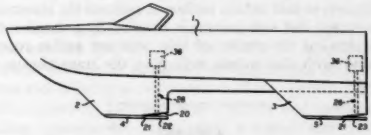
a load member having one end coupled to said jacking means and engaging said energy absorbing means, said energy absorbing means being compressed by said load member within said housing by upward forces on said load member from said jacking means or downward forces on said housing, whereby said energy absorbing means reduces shock loads on said jacking means due to wave action.

4,208,980

HYDROFOIL BOAT

Henry Henkel, 430 E. 63rd St., New York, N.Y. 10021

Continuation of Ser. No. 733,688, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 566,155, Apr. 8, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,463
Int. Cl.[2] B63B *1/24*
U.S. Cl. 114—274 **19 Claims**



1. A boat capable of being beached comprising:

(a) a hull,

(b) three long, narrow hydrofoils each having the longitudinal dimension thereof disposed in the direction of the longitudinal dimension of the hull, disposed longitudinally of the hull, all points of each of the hydrofoils being spaced substantially downwardly from the hull and having exposed lower surfaces,

(c) one of said hydrofoils being disposed centrally at one end of the boat, the other two being disposed in transversely spaced relation at the other end of the boat,

(d) an elevator hingedly connected to one end of at least one of said hydrofoils for controlling of elevation of the boat in the water,

(e) support means for each hydrofoil depending from the hull and fixedly supporting the hydrofoil connectedly from the hull in spaced relation along substantially the entire fixed length of the hydrofoil,

(f) the hydrofoils defining the lowermost periphery of the

boat such that the boat can be beached with the hydrofoils in place and so that as beached the boat rests on the hydrofoils, and

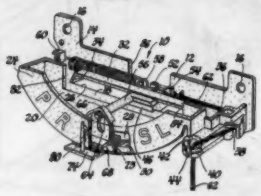
(g) means for controlling the position of said elevator(s).

4,208,981

TRANSMISSION RATIO INDICATOR ASSEMBLY

Thomas F. Coha, Flint; Michael P. Klinck, Swartz Creek, and Thomas Jaje, Goodrich, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1979, Ser. No. 19,118
Int. Cl.[2] G01D 5/04; G09F 9/00
U.S. Cl. 116—28.1 **3 Claims**



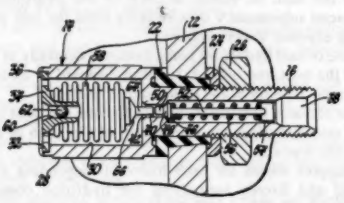
1. A transmission ratio indicator assembly for use in a vehicle to indicate the transmission ratio manually selected by the operator, the assembly comprising; a base having a substantially flat surface, a guide portion spaced from and parallel to the flat surface, a guide opening in the flat surface aligned with the guide portion, a constant radius recess having parallel walls disposed perpendicular to the flat surface, an indicia surface on the outwardly facing surface of one of the parallel walls having transmission ratio indicia imprinted thereon; a slide member slidably disposed on said flat surface and having guide recess means cooperating with said guide portion and guide protuberance means cooperating with said guide opening, and said slide member also having an arm extending into said constant radius recess; manually operable means for moving said slide member on said flat surface; follower means guidably disposed in said constant radius recess and having elongated slot means engaged by said arm to move said follower means along a constant radius path while said arm moves in a linear path; and indicator means secured to said follower means and including a pointer which is moved in unison with the follower means along an arcuate path and the pointer is disposed parallel with and adjacent to said indicia surface to indicate the transmission ratio selected and said pointer is continually pointed radially inward toward the center of said constant radius recess in alignment with the indicia indicating the transmission ratio selected.

4,208,982

AIR SWITCH FOR LOW TIRE PRESSURE INDICATION

Robert J. Byram, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1979, Ser. No. 60,468
Int. Cl.[2] B60C 23/04
U.S. Cl. 116—34 R **2 Claims**



1. A low pressure air switch for a low pressure warning device for a pneumatic tire normally inflated to a preset pressure, comprising

a housing defining a chamber and an outlet port, the housing having an opening for connecting the chamber with the internal pneumatic tire pressure,

a bellows within the chamber having one end fixed relative to the chamber and the other end movable within the chamber, the bellows being charged to a preset pressure corresponding to a low tire pressure limit,

a valve passage interconnecting the chamber and the outlet port, first and second valve seats surrounding the passage terminus at the outlet port and the chamber respectively,

a poppet valve having a head normally spring biased against the first valve seat for closing the valve passage when the tire pressure is above the low tire pressure limit, the poppet valve including stem means for guiding the head into registration with the first valve seat,

a pin on the movable end of the bellows and slidably positioned in the valve passage for selective engagement with the poppet valve so that when tire pressure falls below the low tire pressure limit the bellows expansion causes the pin to push the poppet valve head from its seat against the spring bias to allow tire air to flow through the chamber and the valve passage to the outlet port, and

an annular valve head mounted on the movable end of the bellows around the pin and normally spaced from and aligned with the second valve seat when the tire pressure is at least at a second limit below the said low tire pressure limit, the annular valve head being movable by the bellows against the second valve seat at tire pressure below the second limit to close the valve passage to further airflow to the outlet port,

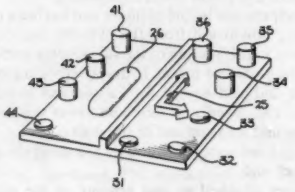
whereby airflow through the passage to the outlet port occurs only when the tire pressure is in a range between the low tire pressure limit and the second limit.

4,208,983

CONTAINER FOR SYMBOLICALLY INDICATING PHARMACEUTICAL PRESCRIPTION

Walter S. Buckley, 1202 B Westlake Blvd., Westlake Village, Calif. 91361

Filed Aug. 17, 1978, Ser. No. 934,485
Int. Cl.[2] G09F 9/00
U.S. Cl. 116—205 **5 Claims**



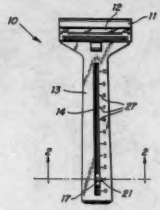
1. A pharmaceutical container having a means for symbolically representing a prescription, for use by the blind, poor of vision, illiterate and the like, said means being divided into at least, a first and second portion, said first portion for indicating dosage requirements of a prescription, said second portion for indicating the time parameters of a prescription, said first portion having a first relief means disposed thereon, symbolically representing medication, and a plurality of protrusions, said protrusions capable of being individually and selectively sheared off to leave remaining the same number of protrusions as the dosage requirements of a prescription, said first relief means and protrusions for providing a symbolic message of the dosage requirements of a prescription.

4,208,984

RAZOR USAGE INDICATOR

Norman Glanzman, 4234 Centennial Ct., Carmel, Ind. 46032

Filed Oct. 12, 1978, Ser. No. 950,731
Int. Cl.[2] B26B *21/40, 21/52*
U.S. Cl. 116—307 3 Claims



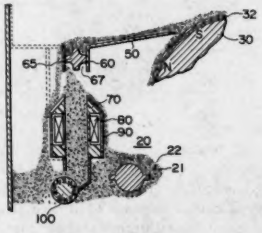
1. A razor including a blade supporting portion and a handle portion, said handle portion being at least partially hollow with an interior space and comprising:
   a. a longitudinal slot extending through a wall thereof;
   b. indicia means located at various positions along at least a portion of the length of said slot;
   c. indicator means movable along the length of said slot, said indicator means including:
      i. a body portion positioned within said at least partially hollow handle portion;
      ii. a neck portion coupled to said body portion and extending through said slot; and
      iii. a pointer portion coupled to said neck portion, said indicator means being movable along the length of said slot to selectively align said pointer portion with said indicia means; and
   d. guide means protruding into said interior space within said at least partially hollow handle portion, said body portion of said indicator means being slidably movable along said guide means to selectively align said pointer portion with said indicia means.

4,208,985

APPARATUS FOR MONITORING THE CONCENTRATION OF TONER IN A DEVELOPER MIX

Masayasu Anzai, and Isamu Terashima, both of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of, Japan

Filed Nov. 3, 1978, Ser. No. 957,096
Claims priority, application Japan, Nov. 7, 1977, 52-132537
Int. Cl.[2] B05C *11/00*
U.S. Cl. 118—712 14 Claims



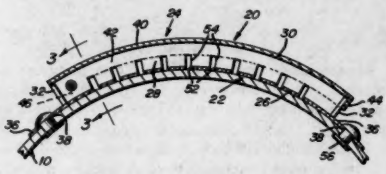
1. An apparatus for monitoring the concentration of toner in a mass of developer mix containing the toner and carrier particles, comprising:
   a rotary sleeve having a peripheral surface that attracts said developer mix and that transports the developer mix;
   a sampling cylinder inside which the developer mix flows;
   means for detecting the concentration of the toner in the developer mix flowing inside said sampling cylinder;
   a guide plate disposed above an upper end opening of said sampling cylinder for stripping away a part of the developer mix attached on the peripheral surface of said rotary sleeve and for supplying the part of the developer mix to an upper end opening of said sampling cylinder;
   means disposed at a lower end opening of said sampling cylinder for discharging the developer mix inside said sampling cylinder at a fixed flow rate; and
   means disposed immediately superjacent to the upper end opening of said sampling cylinder for limiting a flow rate of the developer mix to be supplied to said sampling cylinder, whereby the rate of flow of developer mix inside said sampling cylinder is stable.

4,208,986

ANIMAL DEODORIZING COLLAR ATTACHMENT

Kathryn N. Costanzo, Port Chester, N.Y., assignor to D. V. Smith, Wendell, N.C., a part interest

Filed Sep. 3, 1976, Ser. No. 720,623
Int. Cl.[2] A01K *27/00*
U.S. Cl. 119—106 4 Claims



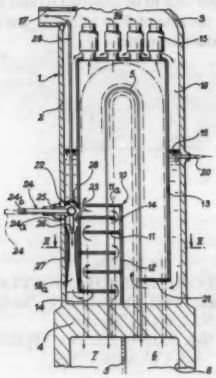
1. An attachment for supporting aromatic animal treatment material and the like from a collar worn by an animal, said attachment defining an elongated housing having opposite end portions and defining an outwardly concave arcuate longitudinal side extending between side opposite end portions and including opposite side longitudinal marginal edge portions, said housing further defining longitudinal opposite side walls integral with and extending along said opposite side marginal edge portions and projecting outwardly of the convex side of said longitudinal side, said housing including longitudinally spaced transversely extending elongated slots formed in said longitudinal side extending completely thereacross and into the adjacent marginal portions of said side walls, said opposite end portions including securing means for securing said housing on a flexible animal collar with said concave side of said arcuate longitudinal side opposing and extending along the outer side of said collar and with the collar portion extending between said end portions being arcuate and conforming to the arc of said longitudinal side, said housing including an open longitudinal side opposite said arcuate side, closure means removably closing said open side, said housing being constructed of stiff, but bendable material and the slots formed in said arcuate side and adjacent marginal portions of said side walls enabling the housing to be bent to vary the radius of curvature of said arcuate side to conform to the radii of curvature of animal collars of different sizes.

4,208,987

STEAM GENERATOR

Jean-Edmond Chaix, Manosque, and Maurice Fajeau, Pertuis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,717
Claims priority, application France, Jun. 15, 1977, 77 18322
Int. Cl.[2] F22B *1/06*
U.S. Cl. 122—32 3 Claims



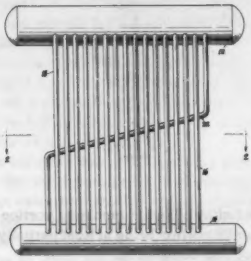
1. A steam generator comprising a substantially cylindrical enclosure having a vertical axis, a horizontal tube plate disposed in the enclosure adjacent the lower end thereof, inlet and outlet collector chambers disposed in said enclosure below said tube plate, a bundle of U-shaped tubes disposed in said enclosure with the ends connected through said horizontal tube plate to said inlet collector and said outlet collector, respectively, for circulating a primary fluid through said tubes, means for providing a secondary fluid into the enclosure in liquid form and means for extracting said secondary fluid from the enclosure in vapor form, an inner casing surrounding said bundle of tubes, separating devices located at the upper end of said inner casing above said bundle of tubes for separating the liquid phase from the vapor phase and passing said liquid phase into an annular chamber provided between said casing and said enclosure so that the liquid phase comes into contact with said tube plate, a heater in which the secondary fluid is brought to its boiling temperature located in said casing adjacent said plate with said bundle of tubes passing therethrough, ejector pump means disposed in the lower part of said annular chamber adjacent said heater, partition means in the lower part of said annular chamber defining a pump chamber adjacent said heater separate from the remaining volume of said annular chamber, first passage means through said casing communicating the upper end of said heater with said pump chamber, second passage means through said casing communicating the lower part of said pump chamber to said heater for recycling the majority of the flow of secondary fluid in liquid form through said pump chamber back to said heater and an additional passage means from the top of said heater to said chamber defined by said casing above said heater through which the remaining flow passes towards the separating means after passing around the bundle of tubes above said heater.

4,208,988

ANTIVIBRATION SPACER TUBE

Martin Jacobs, Hartford, and Raul J. Roccatagliata, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 19, 1978, Ser. No. 953,058
Int. Cl.[2] F22B *37/24*
U.S. Cl. 122—510 6 Claims



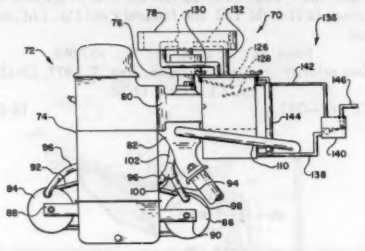
1. A boiler having a lower drum and an upper drum for the containment of a pressurized fluid therein, a bank of parallel tubes extending between the lower drum and upper drum to permit the flow of fluid therebetween, an antivibration tube in said tube bank connected to opposite ends of the upper and lower drums and adapted to extend obliquely therebetween, said obliquely extending tube being offset to lie in laterally abutting relation to the bank of parallel tubes extending between lower and upper drums, and a weldment joining the parallel tubes to the oblique antivibration tube to form an integral assembly.

4,208,989

WATER VAPOR INJECTION SYSTEM

Radford H. Hart, Apex Post Office, Apex, N.C. 27502

Division of Ser. No. 868,518, Jan. 11, 1978, Pat. No. 4,141,323, and a continuation-in-part of Ser. No. 440,550, Feb. 7, 1974, abandoned. This application Dec. 15, 1978, Ser. No. 969,881
Int. Cl.[2] F02M *25/02*
U.S. Cl. 123—25 B 10 Claims



1. A process of generating and injecting water vapor into an air-fuel mixture passing from a carburetor of a combustion engine comprising:

(a) forcing ambient air into and through an air inlet means;

(b) preheating said ambient air to at least 100° C. while the same is being forced through said air inlet means;

(c) directing the forced heated air from said air inlet means directly into a volume of water contained in a water container wherein moisture becomes associated with the air moving through the water as an evenly dispersed foaming action is realized as the forced heated air moves through the volume of water;

(d) continuing to force the cooled moistened air from said water vapor container through an air outlet means;

(e) directing the moistened air in said air outlet means to said engine carburetor and discharging the moistened air directly into the air intake area of said engine carburetor; and

(f) mixing said moistened air with the air-fuel mixture passing through the engine carburetor prior to the combined mixture reaching the engine intake manifold.

3. A water vapor injection system for adding moist air to the air-fuel mixture passing through a carburetor into the combustion chamber of an engine, said water vapor system comprising: a water container means completely independent of the engine and engine cooling system adapted to contain a volume of water therein for moistening air being passed therethrough prior to reaching said engine; an air inlet means operatively connected to said water container means, and including interior air inlet means extending interiorly of said container means and having air exit opening means disposed at a position below the normal level of the water in said container means; an air pump means operatively connected to said air inlet means for forcing ambient air therethrough and into said water container means and out said air exit opening means and through said volume of water within said container means, such that an evenly dispersed foaming action is realized as the forced air moves through the water in said water container means and the air becomes moistened air in the process; means for heating the forced air generated by said pump means to at least 100° C. prior to entering said water container means in order that the heated air passing through the water as air bubbles may act to vaporize water about the interface between the heated air bubbles and the surrounding water; and an air outlet means operatively connected between said water container means and the carburetor intake area of said engine for receiving the moistened air leaving said water container means and delivering the same to the carburetor of said engine where said moistened air mixes with the air-fuel mixture passing from the carburetor into the combination chambers of said engine.

4,208,990

ELECTRONIC CLOSED LOOP AIR-FUEL RATIO CONTROL SYSTEM

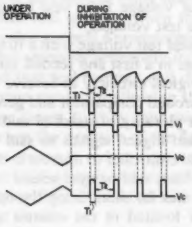
Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 9, 1977, Ser. No. 795,237

Claims priority, application Japan, May 10, 1976, 51-52103

Int. Cl.[2] F02B 5/02

U.S. Cl. 123—32 EE **10 Claims**



1. A mixture control system for an internal combustion engine having an exhaust gas sensor for generating a signal representative of the concentration of a predetermined constituent of the exhaust gases from said engine, said signal having high and low voltage levels depending on the concentration of said constituent gas when said gas sensor is above a nominal operating temperature and having said low voltage level when said sensor is below said nominal operating temperature, and means for supplying mixture to said engine in response to a feedback control signal derived from said exhaust gas sensor, comprising:

first means for detecting when said exhaust gas sensor is below said nominal operating temperature;

second means for clamping the magnitude of said feedback control signal to a predetermined voltage level in response to said first means; and

third means responsive to said first means for generating a plurality of unipolar electrical pulses during a single uninterrupted open loop period of operation which vary periodically between first and second voltage levels, the first voltage level corresponding to said predetermined voltage level of said clamped signal, said second voltage level corresponding to enrichment of said mixture, said electrical pulses fed to said mixture supplying means.

4,208,991

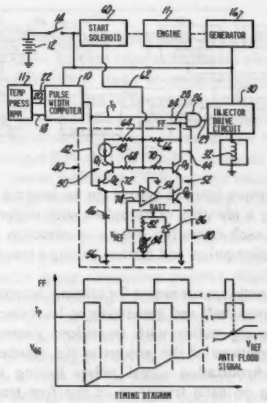
ANTI-FLOOD CIRCUIT FOR USE WITH AN ELECTRONIC FUEL INJECTION SYSTEM

Junuthula N. Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1978, Ser. No. 901,402

Int. Cl.[2] F02D 5/00

U.S. Cl. 123—32 EG **6 Claims**



1. In a fuel management system for a fuel-injected internal combustion engine comprising engine cranking means providing a cranking signal while the engine is being cranked, at least one electromagnetically actuatable fuel injection valve means, engine synchronization timing generator means for generating a timing signal synchronizing the operation of the injector means with an event in an engine revolution, temperature sensor means providing a temperature dependent signal having a magnitude varying with engine temperature, pulse-width computing means providing a series of variable width injector-actuation pulses, and injector drive circuit means normally operative to actuate the fuel injection valve means for periods corresponding to the widths of the injector actuation pulses transmitted thereto, anti-flood means for reducing the flow of fuel to the engine during cranking characterized by

(a) fuel content storage means operative to store a representation of the quanity of fuel supplied to the engine during cranking;

(b) variation means adapted to be coupled to said fuel content storage means to vary said fuel representation at a predetermined rate;

(c) first logic means coupled to said fuel content storage means, to said variation means, to the pulse width computing means and to the engine cranking means, said first logic means being operative to couple said variation means and said fuel content storage means during an injector actuation pulse generated in the presence of the cranking signal;

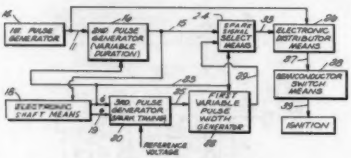
(d) reference means providing a reference signal;
(e) comparator means having a first input coupled to said fuel content storage means and a second input coupled to said reference means, said comparator means providing an incipient flood output signal when said fuel representation of said fuel content storage means exceeds said reference signal; and
(f) second logic means coupled to the pulse width computation means, to the injector drive circuit means, to said comparator output, and to the engine cranking means, said second logic means being operative to control the injector drive circuit when said comparator means provides said incipient flood output signal in the presence of the engine cranking signal.

4,208,992

ELECTRONIC IGNITION SYSTEM

Benito Polo, 9446 Borson St., Downey, Calif. 90241

Filed Mar. 20, 1978, Ser. No. 888,106
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 R **10 Claims**



1. An electronic ignition system for an internal combustion engine having a plurality of cylinders with reciprocating pistons therein, each operating over a combustion cycle in response to ignition pulses and further having a crankshaft, comprising:

electromagnetic sensor means for sensing the rotation of said engine crankshaft and generating at least one first timing signal having pulses with transitions corresponding to unique positions of the pistons in the combustion cycle, and synchronization signal pulses having rising edges occurring on each transition of the first timing signals, whereby the pulse repetition rate of the synchronization signal is representative of the angular speed of the crankshaft;

electronic shaft means for generating a rate signal independent from but representative of the rate of rotation of said crankshaft and a position signal independent from but representative of the angular position of said crankshaft, the position signal being periodically synchronized to the crankshaft position by said synchronization signal pulses, the rate signal being coupled to the electromagnetic sensor means for defining a falling edge for each synchronization pulse;

reference voltage means for providing a reference voltage representative of the basic engine timing;

pulse generator means for adding said rate signal and said position signal and comparing the result against said reference voltage for generating a spark advance signal having a plurality of pulses each having a leading edge advanced by an amount proportional to the engine speed as determined by the value of the rate signal;

select means for selecting and outputting a selected one of the synchronization signal pulses or spark advance signal, the outputted signal being a spark enable signal; and

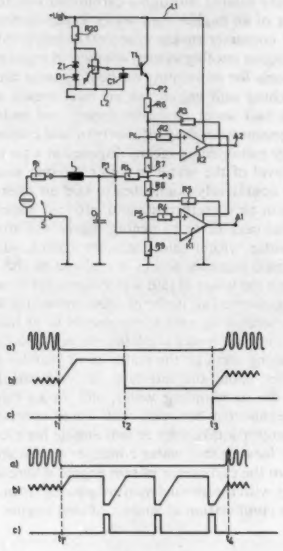
distributor means for electronically combining said first timing signal and said spark enable signal for sequentially directing said spark enable signal to each of a plurality of leads coupled to said internal combustion engine for providing said ignition pulses.

4,208,993

METHOD AND APPARATUS FOR MONITORING THE OPERATION OF AN OXYGEN SENSOR

Cornelius Peter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,506
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707383
Int. Cl.[2] F02M 7/00
U.S. Cl. 123—119 EC **18 Claims**



1. A method for monitoring the operational status of an oxygen sensor located in the exhaust system of an internal combustion engine, said engine including a mixture generator for generating a combustible mixture of fuel and air and a controller for receiving control signals from said oxygen sensor and for controlling said mixture generator, the improvement in said method comprising the steps of:

generating a reference voltage and combining the same with the output voltage from said oxygen sensor to thereby produce a test voltage;

comparing said test voltage with a first and a second threshold voltage in a first and second comparator;

providing logical circuitry to receive the outputs from said first and second comparator and generating logical signals defining a plurality of states of said oxygen sensor; and

supplying said logical signals to said controller to thereby switch said controller to operate in closed-loop mode with feedback from said oxygen sensor or in open-loop mode.

5. An apparatus for monitoring the operational status of an oxygen sensor located in the exhaust system of an internal combustion engine, said engine including a mixture generator for generating a combustible mixture of fuel and air and a controller for receiving control signals from said oxygen sensor and for controlling said mixture generator, and wherein the improvement comprises:

a source of reference voltage including a resistor, connected to said oxygen sensor at a first junction to generate a test voltage;

first and second comparator circuits, having different respective first and second switching thresholds, the inputs of both comparators being connected to said first junction to receive said test voltage;

a detector circuit, connected to the output of said comparator circuits, for generating logical signals related to the magnitude of said test voltage with respect to said first and second switching thresholds;

a timing circuit, for switching said controller from closed-loop control to open-loop control after the expiration of a monitor interval; and

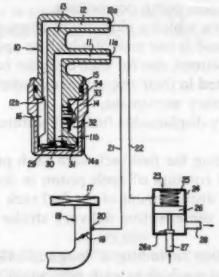
said detector circuit is connected to said timing circuit to provide a reset signal thereto in dependence of the output signals from said first and second comparators, to thereby inhibit said timing circuit.

4,208,994

THERMALLY RESPONSIVE VALVE

Kazuhiko Kitamura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1978, Ser. No. 928,968
Claims priority, application Japan, Jul. 28, 1977, 52/90740
Int. Cl.[2] F02M *25/06*; G05D *23/02*
U.S. Cl. 123—119 A **6 Claims**



1. A thermally responsive valve comprising:

a first fluid passage means including an inlet port;

a second fluid passage means including an outlet port;

a first seal member disposed between said first and second fluid passage means;

a bimetal normally engaging with said seal member for interrupting communication between said first and second fluid passage means, said bimetal being snapped over to be separated from said seal member when the temperature surrounding the valve exceeds a predetermined value; and

a second check valve assembly separately formed from and distinct from said first seal member and disposed in said second fluid passage means for allowing the fluid in said first fluid passage means to flow into said second fluid passage means when the pressure of the fluid in said second fluid passage means is reduced to a pressure below that in said first fluid passage means, said check valve assembly preventing fluid flow from said second to said first fluid passage means.

2. A thermally responsive valve as set forth in claim 1, wherein said second fluid passage means further includes a chamber within which is disposed said check valve assembly.

3. A thermally responsive valve as set forth in claim 2, wherein said inlet port is connected to a variable pressure source while said outlet port is connected to a constant pressure source.

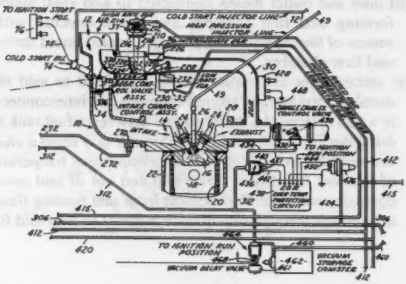
4. A thermally responsive valve as set forth in claim 3, wherein said inlet port is connected to an advance port of a carburetor while said outlet port is connected to an airtight chamber of a control device.

4,208,995

FUEL INJECTION FUEL FLOW CONTROL SYSTEM

Aladar O. Simko; Michael A. Choma, both of Dearborn Heights, and Michael M. Schechter, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,971
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **30 Claims**



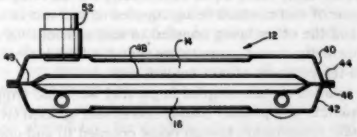
1. A fuel injection control system for an internal combustion engine of the spark ignition type including an air-gas induction passage open at one end to air at ambient pressure level and connected at its other end to the engine combustion chamber to be subject to manifold vacuum changes therein, a throttle valve rotatably mounted for movement across the passage to control the air-gas flow therethrough, an exhaust gas recirculation (EGR) system including EGR passage means connecting engine exhaust gases to the induction passage above the closed position of the throttle valve, an EGR flow control valve mounted in the EGR passage means for movement between open and closed positions to control the volume of EGR gas flow, an engine speed responsive positive displacement type fuel injection pump having a fuel flow output to the combustion chamber that varies as a function of changes in engine speed to match fuel flow and mass air flow through the induction system of the engine over the entire speed and load range of the engine to maintain the intake mixture ratio of air to fuel constant, an air/fuel ratio regulator operably connected to the pump and movable in response to changes in intake air quantity to vary the fuel output of the pump to maintain a constant air/fuel mixture ratio, and control means for modifying the movement of the regulator as a function of EGR flow conditions to change the pump output flow rate to at times maintain the constant air/fuel ratio and at other times to provide an air/fuel ratio other than the constant air/fuel ratio.

4,208,996

HEATER FOR PRE-HEATING FUEL

Arthur Lancaster, Layfayette Hill, Pa., assignor to The Budd Company, Troy, Mich..

Filed Dec. 7, 1978, Ser. No. 967,523
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 E **10 Claims**



1. A fuel heater for a diesel engine for heating a fuel having wax flakes precipitated therein at reduced temperatures, said

fuel being heated in a heat exchanger by a heated liquid, said heat exchanger comprising:

(a) a pair of identical shell members,

(b) a divider member adapted to cooperate with said shell members,

(c) means for securing said shell members to opposite sides of said divider member to form said heat exchanger having separate first and second chambers;

(d) inlet and outlet means connected to said shell member forming said first chamber and interconnected with a source of heated liquid for passing a heated liquid through said first chamber,

(e) second inlet and outlet means connected to said shell member forming said second chamber and interconnected in a fuel system of a diesel engine between a fuel tank and fuel filter for passing said fuel through said second chamber and heat the fuel above the precipitation temperature of the wax flakes as it flows into and out of said second compartment, whereby the heat from said heating fluid is transmitted through said divider member to heat said fuel.

4,208,997

CARBURETOR OUTER VENT CONTROL DEVICE

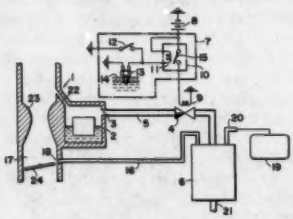
Toshiro Yoshida, and Teruo Kumai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 26, 1977, Ser. No. 836,393

Claims priority, application Japan, May 9, 1977, 52/53519

Int. Cl.² F02M *25/00*

U.S. Cl. 123—136 **2 Claims**



1. A carburetor outer vent control device for use in a fuel system of a motor vehicle of the type including an engine, an outer vent provided in a float chamber of a carburetor, a charcoal canister and a fuel vapor line coupling said outer vent to said charcoal canister, said carburetor outer vent control device comprising:

a source of electrical power;

a normally closed solenoid valve provided in said fuel vapor line;

a relay comprising a pair of normally closed relay contacts, one of said contacts being coupled to said source of power and the other being coupled to said solenoid valve;

a normally closed temperature switch which is responsive to a temperature of said engine; and

an ignition switch coupled in parallel with said temperature switch, said parallel connection of said ignition switch and said temperature switch being coupled to and controlling said relay whereby said solenoid valve is caused to open when said engine's temperature is above a predetermined temperature and said engine is not running.

4,208,998

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

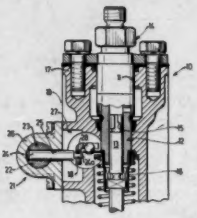
Eberhard Hofmann, Kirchberg; Reinhard Schwartz, Stuttgart, and Berthold Wagner, Renningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 21, 1977, Ser. No. 835,381

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646546

Int. Cl.² F02M *63/02*

U.S. Cl. 123—139 AZ **13 Claims**



1. A fuel injection pump comprising:

a housing within which a plurality of aligned cylinder bores are formed and in one wall of which an opening is formed;

a plurality of pistons, one for each cylinder bore, said pistons being mounted in their respective cylinder bore for reciprocal and rotary movement;

a longitudinally displaceable fuel rack within which a recess is formed;

means connecting the fuel rack with each piston for effecting a partial rotation of each piston in its cylinder upon longitudinal displacement of the fuel rack for the purpose of changing the effective delivery stroke of each of the pistons; and

a control device including a longitudinally displaceable adjusting piston which extends substantially parallel to the fuel rack, and a follower pin which extends between the adjusting piston and the fuel rack, said follower pin passing through said opening in the housing and into the fuel rack recess, said adjusting piston being longitudinally displaceable by a controlled supplementary force, with said displacement being transmitted to the fuel rack by the follower pin, wherein said recess has a longitudinal length such that the fuel rack can be adjusted independently of the control device.

4,208,999

RPM REGULATOR FOR FUEL INJECTION PUMPS

Karl Konrath, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,312

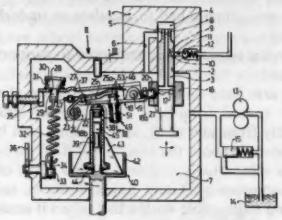
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731968

Int. Cl.² F02D *1/04*; F02M *39/00*

U.S. Cl. 123—140 R **9 Claims**

1. An rpm regulator for a fuel injection pump of an internal combustion engine such as an annular slide-controlled injection pump including a housing, a delivery quantity adjustment member and an rpm signal indicator in said housing, at least one main regulating spring in said housing, a double-armed intermediate lever pivotable about an axis fixedly mounted in said housing and having a first lever arm coupled with said delivery quantity adjusting member of the injection pump and a second lever arm acted upon by said rpm signal indicator adjustable in accordance with the rpm against the force of said at least one main regulating spring, a drag lever subject to the force of said regulating spring, a single-armed adjustment lever, said second lever arm having a free end for supporting

an axis of rotation of said single-armed adjustment lever, said adjustment lever being disposed between said intermediate lever and said drag lever, said adjustment lever being supported on said drag lever at a tilt point lying between its axis of rotation and the axis of said rpm signal indicator, an elastically yielding stop disposed between the axis of said rpm signal indicator and the axis of rotation of said intermediate lever,



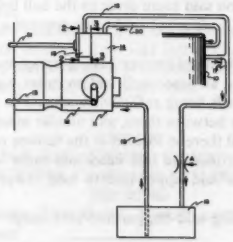
said adjustment lever having a free end arranged to cooperate with said elastically yielding stop, characterized in that said elastically yielding stop is supported on said second lever arm of said intermediate lever and wherein the free end of said adjustment lever is supported on said elastically yielding stop and said rpm signal indicator directly engages said intermediate lever.

4,209,000

FUEL INJECTION SYSTEMS

Terry L. Ivie, 4645 S. 2030 West, Salt Lake City, Utah 84119

Filed Dec. 28, 1978, Ser. No. 973,892
Int. Cl.[2] F02B *77/08;* **F16K** *17/00;* **F16J** *3/00*
U.S. Cl. 123—198 DB **5 Claims**



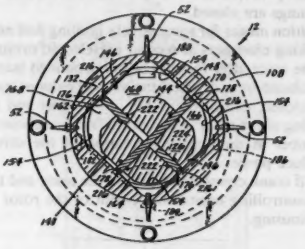
1. In a fuel injection system provided an engine including a fuel supply tank, a fuel pump provided with an air shut-down unit, an operator-actuated air shut-down line, an intake fuel line leading from said tank and connected to said fuel pump, an engine-routed fuel line leading from said air shut-down unit to said engine, and an overflow fuel return line coupled between said engine and said fuel tank: an improvement comprising first means for translating elevated fuel pressure in said overflow fuel return line, and second means interposed between said air shut-down line and said air shut-down unit and coupled via said translating means to said overflow fuel return line, said second means being responsive to elevated fluid pressure in either of said lines for actuating said air shut-down unit, thereby discontinuing fuel flow to said engine.

4,209,001

ORBITAL INTERNAL COMBUSTION ENGINE

Edward J. Miles, 1960 Port Claridge Pl., Newport Beach, Calif. 92660

Division of Ser. No. 760,273, Jan. 18, 1977, Pat. No. 4,097,205.
This application Apr. 24, 1978, Ser. No. 899,301
Int. Cl.[2] F02B *53/00*
U.S. Cl. 123—242 **20 Claims**



1. An orbital-type, internal combustion engine, which comprises:

(a) a generally cylindrical engine housing having a circumferential wall portion and opposing first and second transverse end walls, and having disposed between the end walls, in mutually spaced relationship, first and second annular wall members inwardly projecting from the circumferential wall portion,

(b) a generally spool shaped rotor having a central portion and first and second transverse ends which include, respectively, first and second outwardly projecting, annular flanges,

said rotor being configured and disposed in the housing to cause side surfaces of said first and second flanges to be in close proximity to corresponding transverse side surfaces of said first and second annular wall members, respectively, a combustion air plenum being formed intermediate the housing first end wall and the rotor first end and first wall member, an exhaust gas plenum being formed between the housing second end wall and the rotor second end and second wall member, and a central chamber being formed between the combustion air and exhaust gas plenums,

(c) a drive shaft journalled for axial rotation in the housing, at least a portion of the shaft extending to ends of the rotor,

(d) connecting means for axially rotatably connecting the axial ends of the rotor to the drive shaft with an axial rotational axis of the rotor radially displaced from the rotational axis of the shaft, to thereby cause the central portions of the rotor to orbit about the central chamber when the rotor rotates relative to the drive shaft,

(e) a plurality of vanes mounted in the rotor for dividing the central chamber into a circumferential plurality of working chambers which change volume as the rotor orbits about the combustion chamber, each of said vanes extending diametrically through the rotor and being mounted for independent sliding movement relative to the rotor, each of the vanes being configured so that opposite ends thereof are always in tangential sliding contact with opposite inner wall regions of the housing as the rotor orbits about the combustion chamber,

(f) first port means defining a plurality of combustion air openings through at least one of the rotor first flange and the first wall member for admitting combustion air from the air plenum into the working chambers and second port means defining a corresponding plurality of exhaust gas openings through at least one of the rotor second flange and the second wall member for exhausting exhaust gases from the firing chambers into the exhaust plenum,

said air and exhaust gas openings being positioned and configured to be progressively opened and closed in a successive manner by interference between the rotor first and second flanges and the first and second wall members in response to orbiting of the rotor about the central chamber,

(g) fuel means for successively introducing selected quantities of fuel into the firing chambers at first preselected orbital positions of the rotor when the air and exhaust gas openings are closed,

(h) ignition means for successively igniting fuel and air in the working chambers at second preselected orbital positions of the rotor after fuel has been introduced into the working chambers and when the air and exhaust gas openings are closed, expansion of the ignited fuel and air causing driving of the rotor in said orbital motion about the central chamber in turn causing rotation of the drive shaft to produce power, and

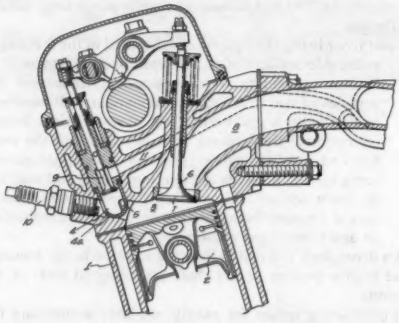
(i) a bell crank connected between the rotor and the housing for controlling orbital movement of the rotor relative to the housing.

4,209,002

TORCH NOZZLE FOR INTERNAL COMBUSTION ENGINE

Takefumi Hosaka, Ann Arbor, Mich.; Shoichi Otaka, Kawagoe, and Takao Okura, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 877,804
Claims priority, application Japan, Feb. 16, 1977, 52/15057
Int. Cl.[2] F02B *19/10, 19/16*
U.S. Cl. 123—32 SP **3 Claims**



1. In an internal combustion engine of the type having a main combustion chamber provided with an intake valve and an exhaust valve and being supplied through a main intake passage and said intake valve with a lean combustible mixture, an auxiliary combustion chamber having a spark plug associated therewith and being supplied through an auxiliary intake passage with a rich combustible mixture, and a torch nozzle communicating said auxiliary combustion chamber with said main combustion chamber, the improvement comprising: an elongated slot in the wall of said auxiliary combustion chamber, said slot defining said torch nozzle, the major axis of said slot extending substantially parallel to the axis of the cylinder of the engine.

4,209,003

SOFTBALL PITCHING MACHINE

Thomas E. Sainsbury, 67 Palmer St., Pawcatuck, Conn.

Filed Aug. 24, 1977, Ser. No. 827,323
Int. Cl.[2] F41B *3/04*
U.S. Cl. 124—7 **8 Claims**

1. Apparatus for propelling a ball in an underhand manner comprising:

a rotatably mounted shaft;

a cam follower fixed on said shaft for rotation therewith and extending radially outwardly therefrom;

a cam engageable with said cam follower including a rising surface and a dwell surface, said dwell surface terminating at an extremity;

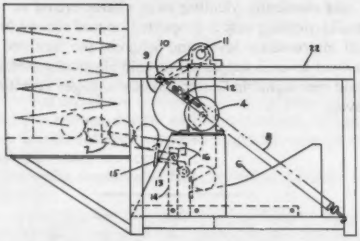
resilient means normally biasing said cam follower into engagement with said cam;

drive means operative for rotating said cam;

means for propelling a ball to simulate an underhand throw including

a ramp having upper surfaces adapted to support and guide a ball; and

a pitching arm fixed on said shaft for rotation therewith at a location spaced from said cam follower and extending outwardly from said shaft, said pitching arm lying in and being movable about the axis of said shaft through a plane which is substantially coplanar with a plane of said ramp and coextensive with said upper surfaces, said pitching arm being engageable with a ball when it attains substantially a six o'clock position;



whereby operation of said drive means causes said follower and said pitching arm to be initially rotated in one direction as said follower engages said rising surface, then remain stationary as said follower engages said dwell surface, then rotate rapidly in an opposite direction under the bias of said resilient means as said follower advances beyond said extremity, said pitching arm thereby attaining substantially the six o'clock position and wherein said pitching arm generally surrounds a ball and holds it on said ramp prior to the ball being propelled along said upper surfaces of said ramp toward a distant location;

a generally cylindrical hopper having upper and lower ends and including an inner wall and an outer wall, said inner and outer walls being sufficiently spaced to permit a ball to pass freely between them, and tubular means adapted to support a ball thereon formed in the fashion of a spiral and mounted intermediate said inner and outer walls and extending from said upper end to said lower end of said hopper; and

means connecting said hopper and said ramp.

4,209,004

TOY BASEBALL PITCHING MACHINE

Melvin Kennedy, Hampton Bays, N.Y., assignor to Nagel/-Kennedy & Associates, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,048
Int. Cl.[2] F41B *3/04*
U.S. Cl. 124—7 **6 Claims**

1. A ball pitching machine comprising:

(a) a frame;

(b) a drive housing fixedly mounted on said frame;

(c) a rotatable output drive means projecting from said drive housing for rotating a pitching arm;

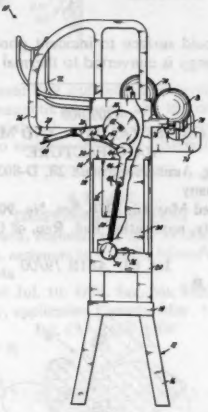
(d) motive means in said drive housing operatively connected to for operating said drive means;

(e) a ball pitching arm including a ball receiving recess at a

first end of said ball pitching arm and a crank pivot remote from said ball receiving recess;

(f) means rotatably mounting said ball pitching arm to said drive housing including a ball pitching arm pivot in said arm at a location remote from said ball receiving recess and said crank pivot;

(g) said rotatable output drive means including means contained wholly within said output drive means for rotating said ball pitching arm relative to said drive housing to at least a top dead center position of said crank pivot relative to said ball pitching arm pivot comprising a hollow cylindrical drive wheel having at least two ratchet teeth projecting radially inwardly from a substantially cylindrical inner surface of said hollow cylindrical wheel and a pawl



moveably mounted to said ball pitching arm in engaging relationship with one of said at least two ratchet teeth, said pawl translating rotation of said rotatable drive means to said ball pitching arm and a means for said ball pitching arm overrunning said rotating means;

(h) an extension spring connecting said frame to said crank pivot on said ball pitching arm constructed and arranged to rapidly urge said ball pitching arm past said top dead center position of said crank pivot activating said overrunning means;

(i) guard rails extending outwardly from said frame a sufficient radial distance from said ball pitching arm pivot to allow said ball pitching arm to rotate past top dead center substantially within said guard rails.

4,209,005

APPARATUS FOR CUTTING SILICON HAVING A PIVOTED WORK CARRIAGE UTILIZING AN AIR BEARING

Claude Tremeau, Saint-Peray, France, assignor to Crouzet, Paris, France

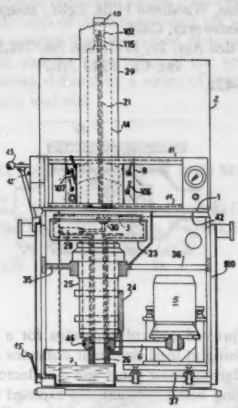
Filed Dec. 18, 1978, Ser. No. 970,144

Claims priority, application France, Dec. 22, 1977, 77 38932

Int. Cl.[2] B24B *27/06*

U.S. Cl. 125—13 R **4 Claims**

1. A machine tool for cutting bars into portions, comprising a frame provided with an upper plate, a support column in the frame, a mandrel mounted to rotate in the support column, an annular saw blade of which the cutting part is made on its inner periphery and which is supported by the mandrel, a motor for rotating the mandrel and the saw blade, a bar-holder carriage arranged to pivot above the upper plate of the frame and about a spindle fixed to the frame and parallel to the axis of rotation of the mandrel and of the saw, and means on the bar-holder carriage for receiving a bar, placing it into position of cut along the axis of the saw blade after having pivoted the bar-holder carriage and for lowering it step by step beyond the plane of cut of the saw blade, characterized in that the bar-holder carriage is in abutment on an air cushion formed between the



lower face of the bar-holder carriage and the upper face of the plate of the frame.

4,209,006

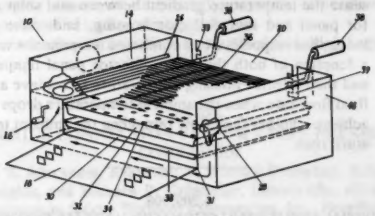
BARBECUE UNIT

Stephen C. Marsalko, 19430 Erhart Rd., Medina, Ohio 44256

Filed Dec. 19, 1977, Ser. No. 861,679

Int. Cl.[2] A47J *37/00*

U.S. Cl. 126—25 R **1 Claim**



1. A barbecue unit comprising:

a U-shaped air chamber defining a combustion chamber;

a plurality of elongated first and second openings formed on said U-shaped air chamber walls such that said first and second openings lie in the same plane and face each other, said first opening being provided with Louvers for controlling the size of said first openings;

a vertically adjustable grill disposed within the U-shaped air chamber;

grate means for retaining hot coals and disposed within said U-shaped air chamber and in a plane parallel to the plane defined by said first and second openings;

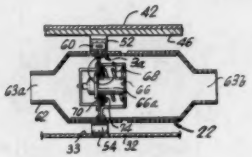
front and back walls for enclosing the U-shaped air chamber at the sides; and

blower means for creating a partial vacuum and directing air through said first set of controlled openings, across said combustion chamber and into said second set of openings; said directed air being redirected to said first set of controlled openings via said U-shaped air chamber.

4,209,007
SOLAR HEATING SYSTEM, AND CONTROL DEVICES THEREFOR

David L. Collins, Woodland Hills, Calif., assignor to Solargenics, Inc., Chatsworth, Calif.

Filed Apr. 29, 1977, Ser. No. 792,314
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—422 6 Claims



1. In an improved control apparatus for a solar collector system comprising at least one solar collector assembly, each including a solar collector panel and a collector housing, said collector housing being substantially exposed to the ambient temperature, fluid input means to said solar collector, fluid exit means from said solar collector, associated means which together with said solar collector and said fluid input and fluid exit means constitutes a closed fluid path, and a pump for pumping fluid through said closed fluid path system, said control apparatus including a thermally responsive switch means for energizing said pump means located in said solar energy collector system so as to sense a temperature which includes the solar collector panel temperature, the improvement which comprises the combination of:

thermally conductive support means mounted adjacent said closed fluid path and connected directly between both said collector panel and said collector housing, and a thermally responsive mechanical valve means for controlling the fluid flow rate supported between said thermally conductive support means in said closed fluid path to sense the temperature gradient between said solar collector panel and said collector housing, said valve means being thus responsive to a combined temperature which is a function of both the solar collector panel temperature and the collector housing temperature to achieve a lower fluid flow rate when the ambient temperature drops and to achieve a higher fluid flow rate when the ambient temperature rises.

4,209,008
PHOTON ABSORBING SURFACES AND METHODS FOR PRODUCING THE SAME

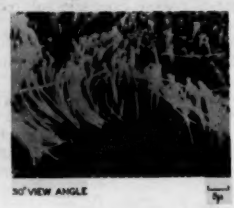
Franklin D. Lemkey, Glastonbury; Frank C. Douglas, Granby; Gerald S. Golden, Windsor, and Clyde S. Brooks, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 741,830, Jul. 26, 1977, Pat. No. 4,086,264. This application Dec. 23, 1977, Ser. No. 863,837
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—452 1 Claim

1. A method for collecting photon energy, and transforming it to thermal energy, comprising:

a. providing an article having at least a surface portion of substantially eutectic composition;

said surface portion having an oriented microstructure consisting of at least two phases, a continuous metallic matrix phase and a discontinuous second phase selected from the group consisting of metals, metalloids and intermetallics, with the second phase having dimensions on the order of 0.01 to 10 microns and with the second phase being oriented substantially normal to the surface; the surface portion of the matrix phase having been removed so that the second phase protrudes in relief.

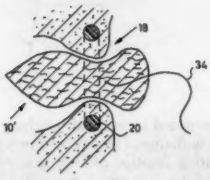


b. exposing said surface to incident photons whereby the photon energy is converted to thermal energy.

4,209,009
ANUS CLOSURE TAMPON AND METHOD OF MANUFACTURE

Gerhard Hennig, Ammerseestrasse 28, D-8035 Gauting 2, Fed. Rep. of Germany

Filed May 16, 1978, Ser. No. 906,946
Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722286
Int. Cl.[2] A61B 19/00
U.S. Cl. 128—1 R 13 Claims



1. A non-magnetic closure device for artificial and incontinent natural anal openings, comprising the combination of

(a) a holding ring of substantially non-expandng material adapted to be implanted around the anal opening, with

(b) a tampon adapted to be removably inserted into the anal opening and there cooperate with the implanted holding ring, said tampon comprising a substantially cylindrical body of cellular material being non-homogenous in the longitudinal direction of the tampon and formed with three longitudinally aligned sections of differential diametrical expansion characteristics when wetted, a first section and a third section having high expansion characteristics when wetted and being separated by an intermediate second section having lesser expansion characteristics when wetted, said second section being adapted to be positioned within said holding ring when the tampon is inserted into the anal opening.

4,209,010
ARTIFICIAL SPHINCTER

Bruce D. Ward, Barrington, and Alfred R. Perlin, Highland Park, both of Ill., assignors to The Kendall Company, Boston, Mass.

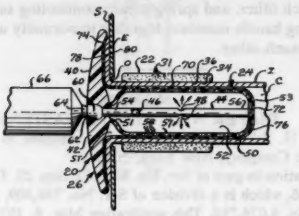
Filed Jul. 26, 1978, Ser. No. 928,140
Int. Cl.[2] A61B 19/00
U.S. Cl. 128—1 R 20 Claims

1. An artificial sphincter for closure of an intestine in a patient's body communicating with an opening adjacent the outside of the patient's body, comprising:

an elongated sheet of a relatively thin flexible material containing a particulate first material dispersed throughout a

substantial portion of the sheet, said sheet extending at least partially around a channel in the intestine; and

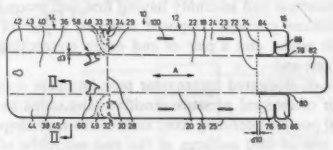
a plug having an insertion portion for placement in the intestine channel and containing a second material, with at least one of said first and second materials comprising, a permanent magnetic material, and the other of said first and second materials comprising a material substantially susceptible to said one magnetic material.



4,209,011
DISPOSABLE SPLINT

Christopher M. Peck, Toronto, and Eric R. Gozna, Scarborough, both of Canada, assignors to Camelia Manufacturing Co. Ltd., Toronto, Canada

Filed Jul. 10, 1978, Ser. No. 923,140
Claims priority, application Canada, Mar. 14, 1978, 298887
Int. Cl.² A61F 5/04
U.S. Cl. 128—87 R **30 Claims**

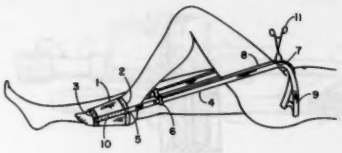


1. A splint formed of a light, strong, relatively rigid corrugated plastic material, comprising: a first elongated panel member having a first longitudinal scored fold line and a second longitudinal scored fold line spaced laterally from the first fold line, the first and second fold lines dividing the first panel member into an inner base, a first sidewall disposed outwardly of the first fold line and having an outer edge, and a second sidewall disposed outwardly of the second fold line and having an outer edge, said plastic material including a pair of spaced outer sheets forming outer surfaces of said material and a plurality of thin longitudinal ribs between said sheets, said ribs being oriented longitudinally in said panel member, said material being radiolucent, said splint further including a second elongated panel member disposed rearwardly of the first panel member, the second panel member having a third longitudinal scored fold line and a fourth longitudinal scored fold line spaced laterally from the third fold line, the third and fourth fold lines being substantially aligned with the first and second fold lines, respectively, and dividing the second panel member into an inner base extension, a first sidewall extension disposed outwardly of the third fold line and having an outer edge, and a second sidewall extension disposed outwardly of the fourth fold line and having an outer edge, the first sidewall and the first sidewall extension being pivotable along the first and third fold lines, respectively, to a substantially upright position pivotable along the second and fourth fold lines, respectively, to a substantially upright position with respect to the base and the base extension, respectively, the first sidewall and the first sidewall extension being joined by a first tear line and the second sidewall and second sidewall extension being joined by a second tear line, the first tear line extending from the first fold line outwardly to the outer edge of the first sidewall, the second tear line extending from the second fold line outwardly to the outer edge of the second sidewall, the first tear line being of length greater than the lateral distance between the first fold line and the outer edge of the first sidewall, the second tear line being of length greater than the lateral distance between the second fold line and the outer edge of the second sidewall, each tear line being defined by a series of spaced cuts in the corrugated plastic material.

4,209,012
KNEE INFLECTION APPARATUS AND METHOD FOR ITS USE

Don M. Smucker, 439 E. 2nd St., Perrysburg, Ohio 43551

Filed Oct. 19, 1978, Ser. No. 952,667
Int. Cl.² A61F 13/00
U.S. Cl. 128—133 **6 Claims**



1. An apparatus for maintaining a predetermined degree of knee joint inflection in a patient during knee surgery, said apparatus comprising

a substantially truncated cone-shaped foot engaging means having a foot receiving end and a foot retaining end, said receiving end having a circumference larger than said retaining end, and the axial length of said foot engaging means being at least sufficient to accept and position said patient's foot,

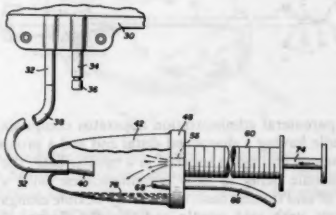
a thigh engaging strap for engaging said patient's thigh, said strap being affixed to said receiving end of said foot engaging means at substantially opposite circumferential positions of said receiving end, and

means for fixedly adjusting the length of said thigh engaging strap.

4,209,013
STERILE CONNECTION SYSTEM USING FLEXIBLE CONTAINER

John B. Alexander, Evanston; T. Michael Dennehey, Arlington Heights, and Richard P. Goldhaber, Libertyville, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 5, 1979, Ser. No. 27,420
Int. Cl.² A61J 7/00
U.S. Cl. 128—213 A **28 Claims**



1. A sterile connection system for continuous ambulatory peritoneal dialysis in which a dialysis solution container having a transfer port is coupled to tubing extending from a patient's peritoneal cavity, the improvement comprising:

a flexible housing having a first area thereof for attachment to said transfer port and a second, spaced area thereof for attachment to said patient's tubing;

said attachment areas defining openings for enabling the transfer port and patient's tubing to extend into the interior of said flexible housing when attached thereto;

said flexible housing having means for receiving a sterilizing fluid therein and being operable to enable the transfer port and the patient's tubing to be sterilized within the housing and also connected to each other within the housing.

4,209,014

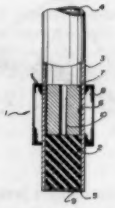
DISPENSING DEVICE FOR MEDICAMENTS

Michael V. Sefton, Toronto, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Dec. 12, 1977, Ser. No. 859,314

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214 F **2 Claims**



1. A device for dispensing a medicament comprising:

an elastic material permeable to the medicament;

a housing for confining the permeable elastic material, said housing having an inlet for connection with a continuous supply of the medicament, and an outlet for delivery;

a reciprocatable piston for repeatedly compressing the permeable elastic material; and

means for reciprocating said piston;

the device being operative with a supply of medicament connected to said inlet to deliver the medicament at a basal rate when the piston is inoperative, and at an augmented rate when the permeable elastic material is repeatedly compressed.

4,209,015

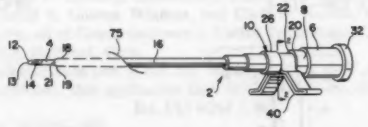
PARENTERAL ADMINISTRATION APPARATUS

Anthony E. Wicks, 3 Greenvale Pl., Scarsdale, N.Y. 10583

Filed May 24, 1978, Ser. No. 909,119

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214.4 **1 Claim**



1. A parenteral administration apparatus comprising a hollow needle having a sharpened distal end and a proximal end, said proximal end being secured in a tubular base, the interior of the needle being in flow communication with a hollow interior of said tubular base, a relatively flexible elongated tube concentric with said needle and slightly shorter than said needle and having a distal end in slidingly frictional engagement with the outer surface of said needle, the proximal end of said tube being secured to one end of a hollow cylindrical base which base has an annular necked-in portion defined by spaced apart annular shoulders, a spring biased removable handle member comprised of a pair of opposed inwardly curved arms biased toward each other and secured against relative longitudinal movement by said shoulders, said removable handle having outwardly extending handle members connected to said arms for causing said curving arms to move open away from each other, and spring means connecting said outwardly extending handle members together to normally urge said arms toward each other.

4,209,016

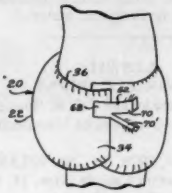
DIAPER WITH ELASTIC FASTENER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 836,162, Sep. 23, 1977, Pat. No. 4,090,516, which is a division of Ser. No. 756,309, Jan. 3, 1977, Pat. No. 4,074,716. This application Mar. 6, 1978, Ser. No. 883,446

Int. Cl.[2] A61F *13/16*

U.S. Cl. 128—287 **3 Claims**



1. A disposable diaper, comprising:

an absorbent pad assembly having first and second opposed waistline portions, opposed surfaces, a pair of opposed side edges, and a pair of end edges connecting the side edges; and

a pair of elongated rectangular tape fasteners comprising a pair of integral pressure-sensitive tape strips having first end portions defining fixed ends of the tape strips secured to one of said surfaces of the pad assembly of the first waistline portion adjacent the opposed side edges thereof, second end portions defining free working ends of the tape strips having free split securement portions for attachment to remote surface portions of the second waistline portion, with said second end portions including uninterrupted severance lines extending longitudinally through said rectangular fasteners from an outer edge of the tape strip to a location adjacent said side edges of the pad assembly and defining said split securement portions on opposed sides of said severance lines, said split securement portions being spreadable so as to be spaced from each other when attached to said second waistline portion and thereby distribute the securing forces in the fastener over a wide area of the diaper surface portions and secure a snug fit of the diaper on an infant, and release means releasably attached to and covering adhesive on all said securement portions.

4,209,017

SURGICAL INSTRUMENT HAVING SELF-REGULATING RADIANT HEATING OF ITS CUTTING EDGE AND METHOD OF USING THE SAME

Robert F. Shaw, 50 St. Germain, San Francisco, Calif. 94114

Continuation-in-part of Ser. No. 534,756, Dec. 2, 1974, Pat. No. 4,089,336, which is a continuation of Ser. No. 63,645, Aug. 13, 1970, abandoned, which is a continuation of Ser. No. 681,737, Nov. 9, 1967, abandoned. This application Mar. 14, 1975, Ser. No. 558,338

Int. Cl.[2] A61B *17/36*

U.S. Cl. 128—303.1 **19 Claims**

18. The method of cutting using a blade means having a

cutting edge operating at an elevated temperature the method comprising:

introducing radiant energy into a substantially transparent blade means; and

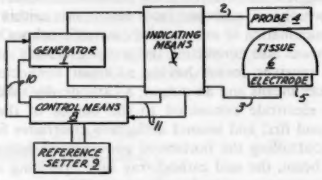
absorbing radiant energy in the region of the cutting edge.

4,209,018

TISSUE COAGULATION APPARATUS AND METHOD

Hans H. Meinke, Gockelberg 3, Gauting, Fed. Rep. of Germany (D-8035); Gerhard Flachenecker, Bozener Str. 2, Ottobrunn, Fed. Rep. of Germany (D-8012); Karl Fastenmeier, Lutzelsteiner Str., Munich 45, Fed. Rep. of Germany (D-8); Friedrich Landstorfer, Pirolstr. 3a, Munich 60, Fed. Rep. of Germany (D-8), and Heinz Lindenmeier, Furstenrieder Str. 7, Planegg, Fed. Rep. of Germany (D-8033)

Division of Ser. No. 709,610, Jul. 29, 1976, Pat. No. 4,114,623.
This application May 30, 1978, Ser. No. 910,874
Int. Cl.[2] A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.17 **7 Claims**



1. A method of regulating the current applied to a high-frequency current tissue-coagulating device having a probe acting as one electrode, a second electrode, and a generator of high-frequency current applying said current to said electrodes, said tissue having the property of steaming off when heated to high temperature, said method comprising regulating the current output of said generator so as to generally maintain it below the current level at which an arc will ignite at the probe by, at spaced-apart points in time raising the current to a level at which an arc ignites, detecting said arc, and reducing the current to a lesser level at which the arc extinguishes, and supplying current at said lesser level for coagulating purposes.

4,209,019

STYLET INSERTION GUIDE AND ROTATION CONTROL DEVICE FOR USE WITH BODY IMPLANTABLE LEAD

Robert G. Dutcher, Columbia Heights, and Edward G. O'Neil, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 5, 1979, Ser. No. 1,201
Int. Cl.[2] A61N *1/00*
U.S. Cl. 128—419 P **5 Claims**

1. A stylet assembly for use in a body-implantable lead adapted to be connected at its proximal end to a medical device and secured at its distal end to tissue of a living body for electrical stimulation thereof and for detecting electrical signals, with said lead comprising;

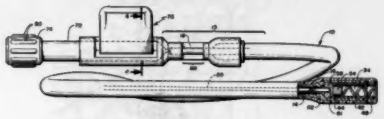
an electrical conductor extending between the proximal and distal ends of said lead;

electrode head means affixed to the distal end of said lead having electrode means exposed to body tissue and electrically connected to the distal end of said conductor and adapted to supply electrical impulses to and receive electrical signals from tissue at a desired location inside the living body, said electrode head means having a chamber therein;

a lumen extending from the proximal end of said lead to said chamber;

material means substantially inert to body fluids and tissue encasing said conductor and said lumen;

helical tissue securing means extending axially from the distal end of said lead adapted to be screwed into body tissue;



rotatable means within said chamber coupled with said helical tissue securing means and adapted to be rotated to in turn rotate said helical tissue securing means to extend it from said chamber and into body tissue;

said stylet assembly comprising in combination:

stylet means adapted to extend through said lumen and engage said rotatable means;

knob means extending from the proximal end of said stylet means for rotating said stylet and said rotatable means to advance said helical tissue securing means from said retracted position within said chamber to said advanced position and into body tissue to secure said electrode means in contact with body tissue; and

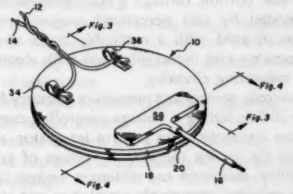
guide means constructed and arranged to receive said knob means, said guide means including index means providing an indication each time a predetermined rotational increment has been traversed.

4,209,020

ELECTRODE ASSEMBLY

R. Frederick Nielsen, P. O. Box 3404, Cherry Hill, N.J. 08034

Filed Sep. 19, 1978, Ser. No. 943,636
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—640 **13 Claims**



1. A disposable electrode assembly comprising:

a thin flexible pad of insulating material, said pad having an adhesive means on one surface thereof for attaching the same to a person's body;

a body electrode on said one surface of said pad, said body electrode being adapted to be in electrical contact with a person's body when said pad is attached thereto;

input connector means adapted to be connected to remotely located electrode means to receive signals from said elec-

trode means and output connector means adapted to be connected to an external device for delivering signals thereto, said input and output connector means being carried by said pad at a position remote from said one surface, and

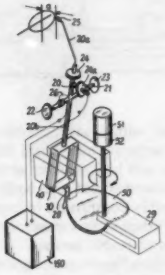
conductor means carried by said pad electrically interconnecting said input connector means to said output connector means and said output connector means to said body electrode.

4,209,021

APPARATUS FOR GENERATING AND MEASUREMENT OF DEFINED FORCES FOR MEDICAL APPLIANCES

Nils Warming, Hamburg, Fed. Rep. of Germany, assignor to J. D. Möller Optische Werke GmbH, Wedel, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,405
Int. Cl.[2] A61B 9/00
U.S. Cl. 128—652 **3 Claims**



1. An apparatus for the generation and measurement of defined forces independent of position or travel of transmitting members for medical examination appliances, said apparatus comprising:

(a) in a housing, a two-armed lever pivotably mounted about a horizontal axis for movement in a vertical plane, the center of gravity of said lever coinciding with the pivot axis of said lever, a contact probe for engaging a body area under examination secured to the free end of the upper arm of said lever;

(b) force producing means including a permanent magnet system and a rectangular coil disposed at the free end of a lower lever arm of said lever with said rectangular coil being affixed to said lower lever arm, said rectangular coil when moving said lever adapted to move, with at least one side portion, through a homogeneous magnetic field generated by said permanent magnet system, narrow strips of gold with a negligibly small resisting torque connecting said rectangular coil with electronic control and measuring circuitry;

(c) electronic control and measuring circuitry for energizing said coil including a voltage-controlled constant current source connected to a control integrator, an input keyboard for setting the output voltage of said electronic circuitry, maximum and minimum limiters in the form of limit switches operatively coupled to said integrator, and electromagnetic indicating means;

(d) the extent of movement of said lever about its pivot axis in the homogeneous field of said permanent magnet system adapted to being restricted;

(e) the movement of said lever being mechanically controlled by a heart-shaped cam plate serving as detent being driven by a motor and connected with a control for said motor to effect controlled movements of said contact probe;

(f) said heart-shaped cam plate being connected to said motor through an interposed gear train;

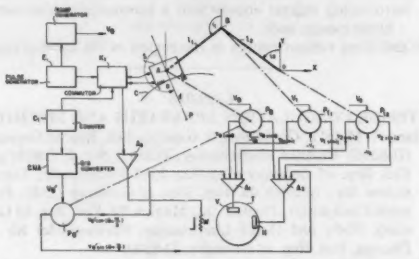
(g) within the operational range of said cam plate, a slide being secured to the free end of said lower arm of said lever and a light barrier system being disposed for movement control of said lever.

4,209,022

ECHOGRAPHY APPARATUS FOR MEDICAL DIAGNOSIS, USING A MULTIPLE-ELEMENT PROBE

Jacques Dory, Meaux, France, assignor to CGR Ultrasonic, France

Filed May 13, 1977, Ser. No. 796,637
Claims priority, application France, Jun. 3, 1976, 76 16744
Int. Cl.[2] A61B 10/00
U.S. Cl. 128—660 **4 Claims**



1. Apparatus for medical B type echography, comprising: transmitter means for generating and transmitting recurrent high frequency electric pulse trains; a linear array of individual transducer means connected to said transmitter means for converting the said electric pulse trains into a beam of acoustic pulses which are reflected from test points within the body under examination so as to produce acoustic echoes, said transducer means also converting the acoustic echoes into electric echoes; receiver means having an input connected to said transducer means and an output; a cathode-ray tube having a control electrode connected to the output of the receiver means, and first and second deflection electrodes for respectively controlling the horizontal and vertical deflection of a writing beam, the said cathode-ray tube operating in an integrating manner so as to form a perceptible image of any test point only after several traverses of the acoustic pulse beam at the said point; the respective transducer means having a common support member on which they are fixedly mounted; switching means, controlled from the said transmitter means, for successively connecting one by one the successive individual transducer means to the transmitter means at the repetition rate of said recurrent electric pulses, whereby the said beam of acoustic pulses is translated in a direction perpendicular to the said beam from one position of translation to another; pantographic means for effecting manual displacement of the support member with respect to the said body, said pantographic means having first and second arms, a first joint connecting the first and second arms together, the second arm having a fixed end opposite to the first joint, a second joint connecting the end of the first arm opposite to the first joint to the said support member; a first sine-cosine potentiometer having a first sine output, a first cosine output and a first slider which is connected to the first joint; a second sine-cosine potentiometer having a second sine output, a second cosine output and a second slider, a third joint connecting the said fixed end of the second arm to the second slider; means for supplying the first potentiometer with a direct-current voltage proportional to the length of the first arm; means for supplying the second potentiometer with a direct-current voltage proportional to the length of the second arm; a third sine-cosine potentiometer having a third sine output, a third cosine output and a third slider; means for supplying the third potentiometer with a

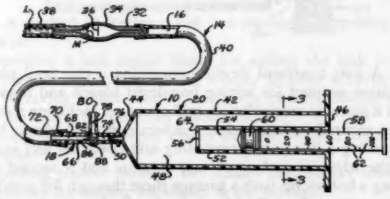
saw-tooth voltage having a slope proportional to the velocity of propagation of the acoustic waves within the said body, the said supplying means being connected to the said transmitting means whereby the frequency of said saw-tooth wave is the pulse repetition frequency, the said third slider being connected to the second joint; a first summing amplifier having an output which is connected to the said first deflection electrode and first, second and third inputs respectively connected to the first, second and third sine outputs; a second summing amplifier having an output which is connected to the said second deflection electrode and first, second and third inputs respectively connected to the first, second and third cosine outputs; counter means, connected to said transmitter means and to said switching means, for providing a digital count indicative of the individual transducer means which is connected to the transmitting means; means for converting the said count into an analog direct-current potential indicative of the said position of translation of the beam; a fourth sine-cosine potentiometer having fourth sine and cosine outputs and a fourth slider, means for rigidly connecting the fourth slider to the third slider with a constant relative angular offset of 90°; the first and second summing amplifiers each having a fourth input, the said fourth input being respectively connected to the fourth sine output and the fourth cosine output of the fourth potentiometer.

4,209,023

TISSUE PRESSURE MEASURING DEVICE

Terry N. Layton, Arlington Heights, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 22, 1979, Ser. No. 13,955
Int. Cl.[2] A61B 5/00
U.S. Cl. 128—748 **7 Claims**



1. A tissue pressure measuring device, comprising:

conduit means defining a lumen comprising a hollow needle at the distal end of the conduit means, a transparent reference portion, and a proximal end;

pump means comprising a plunger, an elongated barrel defining a cavity to slidably receive said plunger and permit movement of the plunger between inner and outer positions relative to the barrel, means defining a chamber communicating with said cavity and substantially increasing the volume of the pump means relative to the volume displaced in said cavity between said inner and outer positions of the plunger, and means for determining the relative position of the plunger in the cavity between said inner and outer positions; and

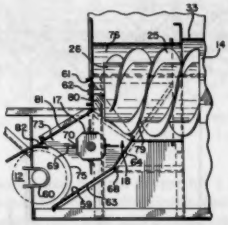
valve means for selectively establishing communication between the pump means and the lumen adjacent the proximal end of the conduit means, and for closing the lumen from the pump means while permitting pumping of fluid by said pump means.

4,209,024

AXIAL FLOW COMBINE WITH IMPROVED INLET TRANSITION AREA

Thomas E. Powell, and Edward Donaldson, both of Brantford, Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Canada

Filed Jan. 10, 1979, Ser. No. 2,299
Claims priority, application Canada, Oct. 31, 1978, 315530
Int. Cl.[2] A01F 7/06
U.S. Cl. 130—27 T **7 Claims**



1. In an axial flow combine adapted to receive header means for harvesting crop materials, said combine having a cylindrical rotor casing including a concave and a rotor longitudinally disposed in said rotor casing, said rotor and concave adapted for threshing and separating the crop materials, said rotor having an inlet portion with helically disposed flighting thereabout for moving crop materials into said rotor casing about the rotor, said combine further having feeder means for transporting the crop materials from the header means toward the rotor and rotor casing, said axial flow combine further having an inlet transition area defined by planar and cylindrical surfaces and disposed between said feeder means and said rotor casing with at least a portion of the inlet end of said rotor extending into the inlet transition area, the improvement in said inlet transition area comprising:

an upwardly and rearwardly sloping planar ramp extending from said feeder means to a connection with said casing along which crop materials may be directed toward the inlet end of said rotor;

a pair of spaced apart planar sidewalls shielding opposite ends of said feeder means,

planar extensions of said sidewalls converging about the inlet end of said rotor in a generally tangential manner to said rotor casing;

means disposed above said ramp between said pair of sidewalls for further defining said inlet transition area; and

rotary means disposed between said sidewalls in said inlet transition area in proximity to the inlet end of said rotor, said rotary means adapted to operate at a higher tangential velocity than said feeder means to accelerate said crop materials primarily upwardly, but also rearwardly, in said inlet transition area along said ramp and said converging sidewalls to feed the crop materials into the flighting about the inlet end of the rotor.

4,209,025

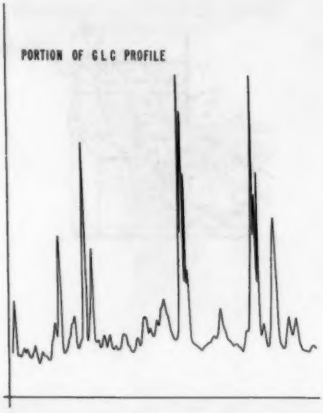
PROCESS FOR AUGMENTING OR ENHANCING THE FLAVOR OF TOBACCO USING 1-(3-METHYLTHIO)BUTYRYL)-2,6,6-TRIMETHYL-CYCLOHEXENE AND THE 1,3-CYCLOHEXADIENE ANALOG THEREOF

Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel; Anne S. Hruza, Brick Town; Manfred H. Vock, Locust; Louis S. Frederick, Holmdel, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

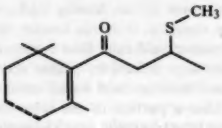
Division of Ser. No. 774,055, Mar. 3, 1977, Pat. No. 4,107,209. This application Jun. 21, 1978, Ser. No. 917,721

Int. Cl.[2] A24B *3/12*

U.S. Cl. 131—17 R **4 Claims**



4. A smoking article comprising a tobacco and intimately admixing therewith a composition consisting of essentially a substantially pure, synthetically produced 1-(3-(methylthio)-butyryl)-2,6,6-trimethyl-cyclohexene or the 1,3-cyclohexadiene analog defined by the structure:



wherein the dashed line is a carbon-carbon single bond or a carbon-carbon double bond.

4,209,026

METHOD OF SECURING A FILTERING MASS FOR TOBACCO SMOKE WITHIN A HOUSING ENCOMPASSING SAID MASS

Mortimer R. Dock, 2111 Jeff Davis Hwy., Arlington, Va. 22202

Filed Dec. 2, 1977, Ser. No. 857,022

Int. Cl.[2] A24F *13/02*

U.S. Cl. 131—187 **1 Claim**

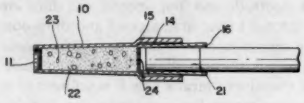
1. A filter for use with smoking articles such as cigarettes and small cigars, having, in combination

(a) a resilient, impervious, substantially cylindrical housing having at one end an integral perforated disc recessed from the end thereof and having the opposite end of said housing open for the receipt and accommodation of a containment member matable therewith;

(b) disposed within said housing a filter mass of water reactive, compressed, expansible, fibrous material and at least one frangible body having a liquid content therein;

(c) a member insertable into the open end of said housing for the containment therein of said filter mass, said member being a truncated cone having at the minor end an integral perforated disc and having the opposite end open for the receipt and accommodation of the end of a cigarette or small cigar;

(d) a tapered cylindrical insert member, open at both ends,



for optional insertion into said containment member for the secure retention in said containment member of the end of a cigarette of less than the standard ring size of conventional cigarettes; and

(e) a polyhedral configuration upon the exterior of the open end of said housing, said configuration extending a selected distance from the end of said housing, said polyhedral configuration serving to secure the housing in a tipping machine when a cigar is mechanically fitted into said open end of said housing.

4,209,027

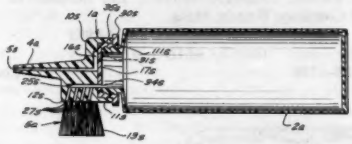
HAIR TREATMENT DEVICES AND PACKAGING THEREFOR

Shila Morganroth, 1225 Waterbury Rd., Highland, Mich. 48031

Filed Jun. 21, 1974, Ser. No. 481,695

Int. Cl.[2] A45D *1/00*

U.S. Cl. 132—9 **13 Claims**



1. A hair treatment device comprising a thin wall plastic container adapted for mixing powdered bleach and liquid to form a paste by manipulation, said container including a single outlet secured to an annulus, a separate molded plastic body comprising a first part surrounding said container and engaging the adjacent surface of said annulus and a second part having a hollow tip with a passage there through for engaging the opposite surface of said annulus for discharging paste from said plastic container through said single outlet as a stream into and out of said hollow tip, and means connecting said thin wall container by means of said annulus in liquid tight relation to said molded plastic body.

4,209,028

LANCE CONSTRUCTION FOR BOILER CLEANING APPARATUS

Jack D. Shenker, Lancaster, Ohio, assignor to Babcock & Wilcox Company, New Orleans, La.

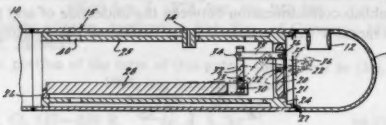
Filed May 29, 1979, Ser. No. 43,048

Int. Cl.[2] B08B *3/02, 9/02*

U.S. Cl. 134—56 R **10 Claims**

1. A lance tube assembly for soot blowers and the like comprising a closed-end tubular structure adapted to project into a heat exchanger and to which either steam or a liquid at lower than steam temperatures can be fed to be discharged against fouled surfaces, characterized by the combination which includes a liquid nozzle in the structure at a position spaced from

the end of the structure, a steam nozzle of larger cross section positioned closer to the end of the structure, valving means for opening and closing communication to the steam nozzle, and temperature sensing means in the structure for opening said



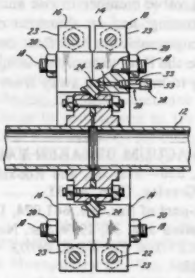
valving means when said temperature sensing means is at or above steam temperature and for closing said valving means when a lower temperature is imposed on said sensing means by a liquid in the structure.

4,209,029

METHOD OF AND APPARATUS FOR SEALING A LEAK IN A PIPELINE

James E. Pennington, Concord, Calif., assignor to Team, Inc., Alvin, Tex.

Filed Dec. 9, 1977, Ser. No. 859,134
Int. Cl.[2] F16L *55/18, 55/16*
U.S. Cl. 137—15 **4 Claims**



1. A method of sealing a leak in a pipeline, comprising the steps of:

providing a leak repair clamp for sealing the leak in the pipeline, the clamp having a body forming a cavity for receiving sealant and a passageway communicating with the cavity for directing sealant thereto;

mounting the leak repair clamp with the pipeline to seal the leak;

injecting sealant through the sealant passageway into the cavity for sealing the clamp to the pipeline;

providing a blind passageway in a plug, the passageway extending through a head portion and into a mounting portion to terminate at a plugging wall; and

stoppering the sealant passageway by mounting the plug therein after the sealant has been injected, the addition of more sealant to the cavity being made possible by drilling through the plugging wall of the plug to place the blind passageway in communication with the sealant passageway drilling through the plugging wall of the first plug to place the blind passageway in communication with the sealant passageway;

injecting sealant through the drilled blind passageway of the plug and through the sealant passageway into the cavity for adding more sealant to the clamp;

providing a second plug having a blind passageway extending through a head portion and into a mounting portion to terminate at a plugging wall; and

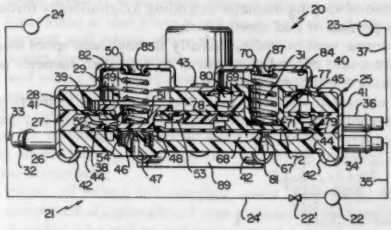
stoppering the sealant passageway of the clamp by mounting the second plug to the first plug, the addition of more sealant to the cavity being made possible by drilling through the plugging wall to place the blind passageway of the second plug in communication with the sealant passageway.

4,209,030

CONTROL DEVICE

Clifford E. Goff, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 13, 1978, Ser. No. 942,059
Int. Cl.[2] G05D *16/00*
U.S. Cl. 137—84 **20 Claims**



1. In a self-contained control device for a system having a first source provided with a changeable fluid pressure value and a second source provided with a changeable vacuum value and having a pressure operated control unit that changes its operating condition in relation to the value of a pressure signal directed thereto, said control device having pneumatically operated control means adapted to be operatively interconnected to said sources and said control unit for increasing said pressure signal from said first source to said unit as the pressure value from said first source increases from a first value thereof to a second value thereof and for thereafter decreasing said pressure signal from said first source to said unit as the pressure value from said first source further increases from said second value thereof to a third value thereof, said control means being adapted to produce said signal in substantially the same manner but at different values for different levels of vacuum at said second source thereof, said control device comprising at least three housing plates disposed in stacked relation, said control means comprising a plurality of pneumatically operated relay means defined in part by said housing plates and each having diaphragm means disposed between certain of said housing plates, the improvement wherein said relay means each has means confined within an intermediate housing plate for receiving said vacuum from said second source.

4,209,031

POSITIVE CONTROL VALVE ASSEMBLY

Gary Sutton, Kalamazoo, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 1, 1978, Ser. No. 874,175
Int. Cl.[2] F15B *11/08, 13/042*
U.S. Cl. 137—106 **9 Claims**

1. A directional control valve assembly for controlling the direction of pressurized fluid from a source of pressurized fluid, into and out of a fluid motor having first and second chambers and thereto a reservoir, said valve assembly comprising:

a valve body including a central passageway, a plurality of interconnected pressurized fluid conduits selectively supplyable with pressurized fluid, a plurality of spaced cavities in fluid communication with said central passageway and selectively connectable to a fluid reservoir;

said valve body further including first and second connecting ports through which fluid may flow out of or into said valve for further passage into or out of first and second chambers of a fluid motor;

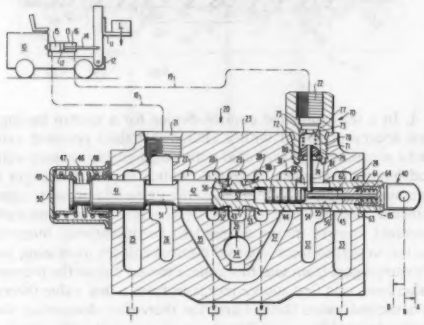
a normally closed tiltable check valve assembly including a compression spring biased tiltable sealing member positioned transversely relative to said control passageway in a fluid passageway between said connecting port and an adjacent cavity for preventing fluid flow from said second connecting port into said adjacent cavity; and having a transversely extending elongated rod fixed at one end to said sealing member and having a further end extending into said adjacent cavity;

elongated cylindrically shaped spool means having inlet and exhaust portions and slidably positioned within said central passageway and including a plurality of cylindrically shaped land portions interconnected by cylindrically shaped portions of reduced diameter,

a bore of varying diameter extending longitudinally through a portion of said spool means;

a narrow vent extending radially through said spool means from said central passageway to a smaller diameter portion of said bore, and

an elongated aperture extending through a cylindrically shaped portion of said spool means into an enlarged diameter portion of said bore that adjoins said cavity adjacent said check valve for receiving said elongated rod into said enlarged diameter portion of said bore,



said spool means being slidable between a neutral position for preventing fluid flow through both said first and second connecting ports, a first active position wherein pressurized fluid unseats said normally closed check valve to flow out of said second connecting port while exhaust fluid simultaneously flows into said first connecting port, and a second active position wherein pressurized fluid passes out of said first connecting port;

and a cylindrical piston slidably positioned within said enlarged diameter portion of said bore, whereby when said spool means is positioned in said second active position, hydraulic fluid flows into said bore through said narrow vent, fluid pressure increases within said bore to move said piston into abutting contact with said rod attached to said sealing member until pressure within said bore exceeds the pressure forcing said check valve to remain closed, whereupon said piston tilts said rod and attached sealing member thereby opening said second connecting port to drain a second chamber of a fluid motor to a reservoir.

4,209,032

AIR-RELIEF VALVES

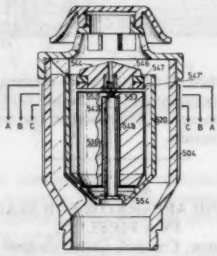
Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed May 22, 1978, Ser. No. 908,011

Int. Cl.[2] F16K *31/20*

U.S. Cl. 137—202 **13 Claims**

1. An air-relief valve, comprising; a housing having a connection at its lower end for connecting same to a water pipeline, and a large orifice at its upper end for releasing or admitting air when filling or emptying the water line; a float within the housing adapted to rise and descent with an increase and decrease in the level of the water within the housing, said float having an axially extending bore; a first valve member having a head at its upper and disposed between the float and the large orifice, a depending stem disposed in said axial bore of the float, and a small orifice through said first valve member head to establish communication between the underside of said first valve member head and said large orifice of the housing; a



second valve member movable by said float such that when the float rises it causes the second valve member to close the small orifice in the first valve member, the rising of the float also causing the first valve member to rise and to close said large orifice in the housing; and an abutment carried by said first valve member engageable by said float during the descent of the float to cause the float to apply its weight to the first valve member tending to move same away from the large orifice.

4,209,033

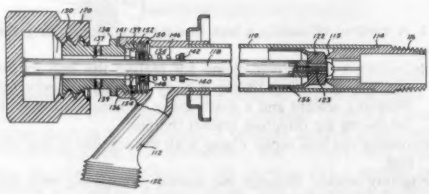
VACUUM BREAKER VALVE

Elder F. Hirsch, 520—21st St., and Ronald F. Hirsch, 707 E. 20th, both of Greeley, Colo. 80631

Continuation-in-part of Ser. No. 641,074, Dec. 15, 1975. This application Jan. 31, 1979, Ser. No. 966,098

Int. Cl.[2] F16K *24/02*

U.S. Cl. 137—218 **3 Claims**



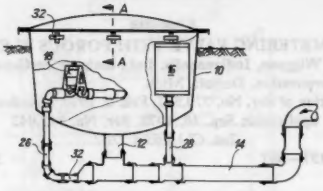
1. In a sill cock comprising an external cock housing; an internal supply shut-off valve, a wall tube connecting said housing to said valve; a valve stem extending from said valve outwardly through said housing, and a body member having an opening receiving the stem threadably secured to the cock housing in water tight relation the improvement comprising stop means positioned on said valve stem within the cock housing, a one way valve means positioned on said valve stem against said stop means adapted to selectively seal the annular opening between the stem and the body member when a positive pressure is present within the cock housing and to unseal the opening between the stem and the body member when a negative pressure is present in the cock housing wherein the improvement further includes resilient skirt means peripherally attached to the shut-off valve adapted to flare and provide a water tight seal in the wall tube between the inlet and outlet side of the valve which has been opened under normal water supply water pressure, in the absence of water pressure in the cock housing.

4,209,034

BACKWATER TANK FOR A BUILDING CONNECTED TO A VACUUM DRAIN FACILITY

Harald Michael, Hamburg, Fed. Rep. of Germany, assignor to Electrolex GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,301
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809431
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.[2] E03D 1/00
U.S. Cl. 137—236 R 10 Claims



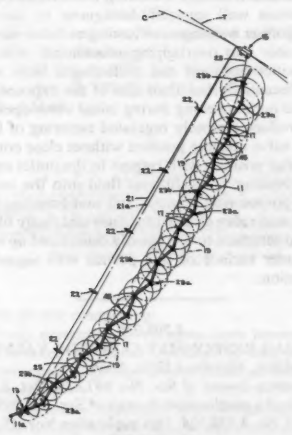
1. In a backwater tank for building connected to a vacuum drain facility, wherein the waste water of the building is transported through gravity conduits into a collector which is connected to a vacuum drain conduit, by means of a check valve that opens automatically at a predetermined maximum water level under the control of a pneumatic control device, and wherein a ventilated backwater tank is connected to the gravity conduit or the collector at a level above the maximum water level in the collector, the backwater tank having a main chamber and being large in comparison to the collector, the improvement wherein at least one of (i) the check valve and (ii) the pneumatic control device, is disposed in the tank, outside the main chamber thereof.

4,209,035

ROTARY IRRIGATION SYSTEM

James M. Hait, 6154 Montgomery Pl., San Jose, Calif.

Continuation-in-part of Ser. No. 663,399, Mar. 3, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,321
Int. Cl.[2] B05B 3/12
U.S. Cl. 137—344 13 Claims



1. A rotary irrigation system for connection to a source of water for irrigating a relatively large area of land, said source being located at the center of the area to be irrigated, said system comprising:

a vertical pipe for connection to said source;

a length of tubing for carrying water, said tubing having a plurality of spaced openings for discharging water along the length of said tubing, one end of said tubing being pivotally connected to said vertical pipe, said pipe having means for coupling water from said source to said tubing, said tubing being formed by a plurality of connected segments with said segments being rigidly interconnected at joints so that adjacent segments define an angle of less than 180° and whereby said joints are placed in a staggered relationship distributed at opposite sides of the mean horizontal center line of the tubing;

a plurality of carriages, each of said carriages including a single support wheel, said carriages being connected to said tubing at said joints along the length of said tubing to support said tubing above the ground; and

a power mover operatively connected to the other end of said tubing to pivotally move said tubing in a path around said vertical pipe.

12. A rotary irrigation system for connection to a source of water for irrigating a relatively large area of land, said source being located at the center of the area to be irrigated, said system comprising:

a length of tubing for carrying water, said tubing being comprised of a plurality of pipe sections connected rigidly together in an end-to-end arrangement, said tubing having a plurality of spaced openings along the length thereof for discharging water;

a vertical pipe for connection to said source, one end of said tubing being pivotally connected to said vertical pipe;

a carriage assembly connected to support said tubing above the ground, said carriage assembly including a plurality of support wheels for supporting said tubing, said support wheels being spaced along the length of said tubing for directly supporting substantially all of said tubing sections;

a single cable rigidly operatively connected at a plurality of intermediate locations thereon to substantially all of said sections of said tubing;

a power mover operatively connected to one end of said cable to pivotally move said tubing in a generally circular path around said pipe, said power mover including a frame; and

means for causing said power mover to create a driving force in a direction so as to produce a radially outwardly directed force component on said tubing at the outer end thereof; said last named means including a front wheel assembly and a rear wheel assembly with each assembly including at least one wheel, power means for driving at least one of said wheel assemblies, and means for securing each of the wheels of said power mover to the frame of said power mover so as to prevent relative pivotal movement thereof with respect to the frame.

4,209,036

ADAPTER FOR BOTTOM OPERABLE TANK CAR VALVE

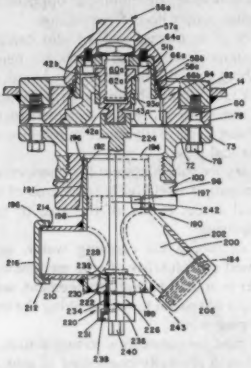
Charles E. Reedy, Bridgeton, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Division of Ser. No. 776,451, Mar. 10, 1977, Pat. No. 4,137,937. This application May 22, 1978, Ser. No. 908,195
Int. Cl.[2] F16K 31/44, 35/06
U.S. Cl. 137—382.5 1 Claim

1. An adapter for use with a bottom operable tank car valve assembly comprising:

a hollow adapter body portion defining a main body opening; a first spout extending radially outwardly from said body portion perpendicular to said adapter body portion; said first spout being hollow and having a first spout opening in communication with said main body opening; said adapter including at least one second spout having a second spout opening in communication with said main body opening and extending in a radial direction different from said first recited spout; said second spout extending

at a vertical inclination different from said first spout making an angle of greater than 90° with said body portion; said pair of spouts facilitating attachment of an unloading conduit to said adapter in an emergency situation; said adapter being made of lightweight material selected from the group consisting of steel, aluminum alloys, and plastic to facilitate attachment of the adapter to a valve guard by a single operator; said adapter body portion including an upper adapter attachment portion comprising a threaded fitting located on the external surface thereof;



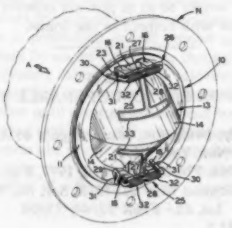
closure means located in the lower portion of the adapter closing said main body opening; said closure means having mounted therein an adapter operator assembly including an operator having a lower connection portion adapted to be engaged by a suitable loading and unloading tool, and a vertical extension extending upwardly within said main body opening, said extension having means at the upper portion thereof for attachment to a tank car valve operator located within said tank car valve operator assembly for opening and closing the tank car valve.

4,209,037

ENVIRONMENTAL CHECK VALVE

Neil R. Upham, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 25, 1977, Ser. No. 854,525
Int. Cl.[2] F16K *15/03*
U.S. Cl. 137—527 **5 Claims**



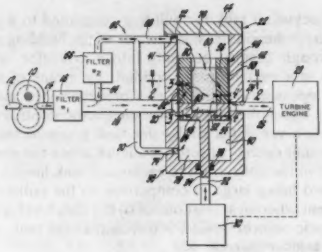
1. A check valve for use in fluid flow ducts, comprising:
a. a mounting ring body having a central orifice;
b. two pairs of diametrically opposed axially extending posts projecting from one face of said ring body and disposed adjacent said orifice;
c. a pair of valve members hingedly mounted one on each said pair of posts adjacent said ring body and pivotable between closed and open positions over said orifice, each said valve member comprising a semi-conical segment having a concave inner surface whose intersection with a plane extending transversely of and normal to said concave inner surface is of elliptical form;
d. means for pivotally hinging each said valve member to its associated pair of posts;
e. a retainer mounted on each said pair of posts outwardly of said hinging means, each said retainer having a first section mounted on said posts against which said valve members abut in the open position and a second section disposed axially outwardly of the end of said posts; and
f. a torsion spring mounted on said second section of each said retainer and bearing against its associated valve member.

4,209,038

FUEL METERING VALVE WITH POROUS ELEMENT

John M. Wiggans, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 770,577, Feb. 2, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,042
Int. Cl.[3] E03B *7/07*
U.S. Cl. 137—547 **3 Claims**



1. A fuel metering valve assembly comprising a housing having a bore therein, means forming an inlet opening and an outlet opening of a predetermined cross sectional flow area, a valve element supported within said bore for relative reciprocation therein, said valve element including an imperforate base segment thereon positionable in overlying relationship to said inlet and said outlet openings to cut off flow therebetween, said valve element further including a reference edge and an annular porous wall segment contiguous to said reference edge, said porous wall segment having an outer surface selectively movable into overlapping relationship with said inlet and said outlet openings and including a flow area therethrough substantially less than that of the exposed flow area through said outlet opening during initial valve opening movements to produce a closely regulated metering of fuel at low flow initial valve opening position without close control of the reference edge position with respect to the outlet opening and means of directing finely filtered fluid into the interface between said porous wall segment and said housing, and means for rotating said valve element to cause said finely filtered flow through said interface to continually flush build up of particles from the outer surface of said porous wall segment during valve operation.

4,209,039

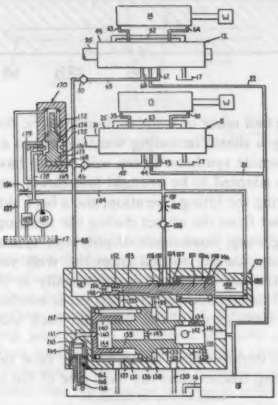
LOAD RESPONSIVE CONTROL VALVE

Tadeusz Budzich, Moreland Hills, Ohio

Continuation-in-part of Ser. No. 947,626, Oct. 2, 1978, abandoned, and a continuation-in-part of Ser. No. 895,041, Apr. 10, 1978, Pat. No. 4,159,724. This application Nov. 15, 1978, Ser. No. 960,767
Int. Cl.[2] F15B *13/08*
U.S. Cl. 137—596.13 **29 Claims**

1. A valve assembly comprising at least one housing having an inlet chamber connected to a pump, a load chamber, and

exhaust means communicable with reservoir means, valve means for selectively interconnecting said load chamber with said inlet chamber and said exhaust means, load sensing port means selectively communicable with said load chamber by said valve means, bypass means between said inlet chamber and said exhaust means, said bypass means responsive to pressure differential between pressure in said inlet chamber and pressure in said load sensing port means and operable to vary bypass flow between said inlet chamber and said exhaust means



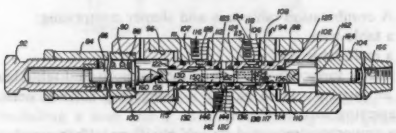
to maintain a constant pressure differential between said inlet chamber and said load sensing port means when pressure in said load sensing port means is above a certain predetermined level, a source of pressure fluid other than said pump, and unloading means having means responsive to pressure in said load sensing port means and biasing means responsive to pressure in said source of pressure fluid, said unloading means having means operable to interconnect for fluid flow said inlet chamber and said exhaust means when pressure in said load sensing port means is below said certain predetermined level.

4,209,040

SEAL MEANS FOR HIGH PRESSURE CONTROL VALVES

Clifford M. Peters, Longview, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Sep. 1, 1978, Ser. No. 939,165
Int. Cl.[2] F16K *31/122, 41/04*
U.S. Cl. 137—625.48 **1 Claim**



1. A valve device comprising:

a valve body presenting an elongate bore having opposite ends and inlet and outlet openings in said valve body communicating with said bore at locations between said opposite ends;

a pair of adapters threaded into opposite ends of said valve body and having integral hollow sleeves extending into said bore from the opposite ends thereof, said sleeves having spaced apart inner ends separated by a clearance gap providing fluid communication between said bore and the interiors of the sleeves, said gap being adjustable in size by threaded movement of said adapters relative to said valve body to vary the distance between the inner ends of the sleeves;

an annular groove in each sleeve and an O-ring seal mounted in each groove, each O-ring seal being of a soft elastomeric material having a durometer hardness between about 50 and 130;

an elongate plunger received in said sleeves for sliding movement therein in sealing contact with said O-ring seals, said plunger having a pair of spaced apart passages extending generally along its longitudinal axis adjacent the O-ring seals;

a pair of ports extending transversely of each passage to permit fluid flow through one passage between the inlet and outlet openings in one position of the plunger, one port of each passage passing over the corresponding O-ring seal when the plunger slides from said one position to another position wherein fluid flow between the inlet and outlet openings is blocked; and

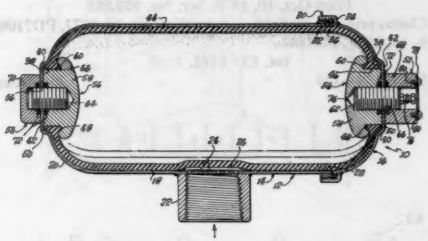
surfaces defined by walls around said ports and O-ring seals which substantially, completely and positively confine the O-ring seals when exposed to said ports to prevent extrusion of the O-ring seals, said ports each having a dimension longitudinally of the plunger which is not substantially greater than the corresponding dimension of each O-ring seal in a direction longitudinally of said sleeves.

4,209,041

FLUID PRESSURE RESPONSIVE ACCESSORY EQUIPMENT

Ernest W. Loukonen, 6920 E. 10th St., Long Beach, Calif. 90815

Continuation-in-part of Ser. No. 707,192, Jul. 21, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,048
Int. Cl.[2] F16L *55/04*
U.S. Cl. 138—30 **23 Claims**



1. A hydraulic system fluid pressure responsive accessory, such as a cavitation eliminator, comprising:

a liquid tight casing including a generally cylindrical tubular casing portion having an end wall defining an end opening in said casing portion and an opposite end opening of substantially the same diameter as the interior of said casing portion, and end cap closing means releasably secured to said casing portion and defining an opening,

a flexible bladder within the casing generally conforming in configuration to the interior of the casing and in contact therewith when inflated,

first securing means releasably anchoring one end of said bladder to said casing end wall,

said securing means including an anchor member engaging the bladder and stud means extending through said end wall opening,

an annular resilient sealing element in an annular space between the anchor member and the casing end wall about the end wall opening to retain pressure in the bladder,

second securing means releasably anchoring the other end of said bladder to said end cap,

said securing anchor means including an anchor member engaging the bladder and stud means extending through the end cap opening,

an annular resilient sealing element in an annular space between the anchor member and the end cap about the end cap opening to retain pressure in the bladder,

each of said first and second securing means including means accessible externally of said casing for releasing and securing the corresponding bladder end relative to said casing,

means for filling the bladder with gas, and

hydraulic inlet means connected with said tubular casing portion intermediate its ends and communicating with the casing interior, whereby upon the occurrence of cavitation in the hydraulic system the gas pressure in the bladder expands to displace hydraulic fluid through the inlet means to eliminate cavitation.

4,209,042

HOSE

Angeles V. Buan, Waukegan, Ill., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 22, 1978, Ser. No. 917,824

Int. Cl.² F16L *11/08*

U.S. Cl. 138—126 **3 Claims**

1. An elastomeric hose having an inner tube of nylon adhered with an adhesive to an outer layer of textile reinforced sulfur curable elastomer, said adhesive being composed of a mixture of phenol-formaldehyde resin and di(alkyl carbitol) formal where the alkyl radical contains from 1 to 12 carbon atoms.

4,209,043

PLASTIC TUBULAR OBJECTS

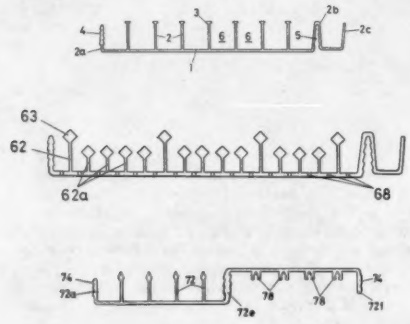
Julian M. Menzel, Sempahore Park, Australia, assignor to Rib Loc (Hong Kong) Ltd., Hong Kong

Filed Oct. 10, 1978, Ser. No. 950,085

Claims priority, application Australia, Oct. 18, 1977, PD2100; Feb. 15, 1978, PD3384

Int. Cl.² F16L *9/16*

U.S. Cl. 138—154 **20 Claims**



1. An elongated strip for forming articles by helically winding the said strip to overlap at least its two longitudinal edge portions characterized by a series of ribs spaced apart across the width of the strip on at least one side thereof to form therebetween a series of open longitudinally-extending side-by-side channels, each of at least some of said ribs having a flange adjacent its free-end portion to strengthen such ribs, each of said flanges being separated from the flange on any adjacent rib, and connecting means on said strip spaced apart transversely on the said strip and adapted to interengage and be connected together when one edge portion of the strip is placed over at least the other edge portion of the strip when helically winding the said strip, whereby to hold the said strip in its helical configuration when wound.

4,209,044

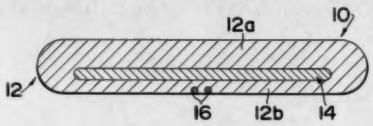
SLING BELT

Kiyoji Taki, Gamagoori, Japan, assignor to Kabushiki Kaisha Miura Kumihimo Kojyo, Aichi, Japan

Filed Jul. 26, 1978, Ser. No. 927,987

Int. Cl.² D03D *11/00*

U.S. Cl. 139—411 **10 Claims**



1. In a sling belt made of wadded double fabric for lifting an object, having: a sheath including warp yarns and a weft yarn made of polyamide synthetic fibers, said sheath having a face side, which is adapted to be brought into direct contact with the object during the lifting operation, and a back side which is positioned apart from the object during the same operation; a core including warp yarns made of polyester synthetic fibers and a weft yarn leading to and from the weft yarn of said sheath, and arranged to extend longitudinally in the hollow portion of said sheath; and binder warp yarns interlacing alternately to the weft yarns of the face and back sides of said sheath,

wherein the improvement comprises the face side of said sheath being thicker than the back side of the same.

4,209,045

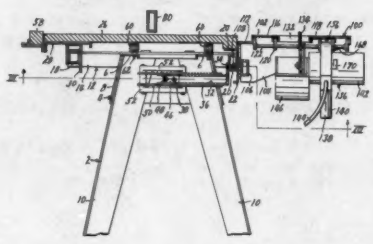
COMBINATION TABLE SAW

Alvin L. Bassett, 2148 SE. 135th St., Portland, Oreg. 97233

Filed Jun. 7, 1978, Ser. No. 913,399

Int. Cl.² B27C *9/02*

U.S. Cl. 144—1 G **11 Claims**



1. A combination table saw and shaper comprising:

a. a table base,

b. a main table top,

c. means supporting said main table top on said table base,

d. an auxiliary table having a planar top surface with an aperture formed therein,

e. a power saw mounted on said auxiliary table beneath said aperture and having a circular blade driven thereby and partially projecting above said planar top surface through said aperture, and

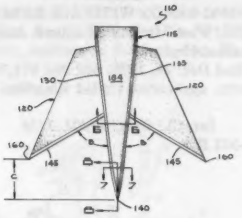
f. means operable to mount said auxiliary table on said table base selectively either in a first position in which the top surface thereof forms a coplanar extension of said main table top at the forward edge of the latter, with said blade projecting upwardly therefrom in a plane parallel to said forward edge, or in a second position in which the previously top surface thereof rises vertically from the forward edge of said main table top and said blade projects horizontally rearwardly over the forward edge portion of said main table top.

4,209,046

LOG QUARTERING WEDGE

Charles O. Lavigne, Ludlow, Mass., assignor to Lavigne & Gauthier, Inc., Ludlow, Mass.

Continuation-in-part of Ser. No. 805,928, Jun. 13, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 861,996
Int. Cl.[2] B27L 7/00
U.S. Cl. 144—193 D 6 Claims



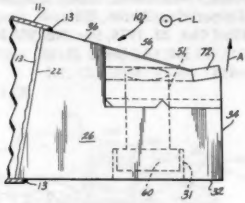
1. Log quartering wedge comprising a pair of tapered side surfaces meeting at the leading edge of the wedge and a pair of quartering blades extending outwardly of said side surfaces in a common plane generally normal to said side surfaces, each of said side surfaces comprising a pair of obliquely angled surfaces meeting generally at an obtuse dihedral angle in said common plane such that the cross sectional configuration of said wedge between said side surfaces in a plane normal to said common plane, has its greatest thickness generally at said common plane, each of said quartering blades including a leading edge disposed at an acute angle relative to the adjacent side surface, said cross sectional thickness of the wedge being substantially greater than the thickness of said quartering blades.

4,209,047

DEBARKER TOE ASSEMBLY

Theodore C. Weill, 110 Carol Cir., Tylertown, Miss. 39667

Filed Jun. 28, 1978, Ser. No. 919,761
Int. Cl.[2] B27L 1/00
U.S. Cl. 144—208 E 1 Claim



1. A debarker toe assembly comprising:

a debarker toe holder to be mounted to a debarker arm including a base and a slanted upstanding wall portion connected thereto facilitating mounting of said toe holder to said debarker arm, said holder further having a recess therein defined by a generally vertical wall and a generally horizontal toe receiving surface, said surface intersecting said vertical wall at a junction extending across the width of said holder base;

a toe including a debarking edge and a pair of adjacent intersecting mounting surfaces for engaging said vertical wall and said surface of said holder, wherein one surface of said toe or holder includes at least two V-shaped recesses, and one surface of the other of said toe or holder includes a pair of V-shaped projections converging to an edge for alignment and interengagement with said recesses to prevent slippage of said toe with respect to said holder during debarking and wherein one of said V-shaped recesses extends across the width of said toe or holder surface in which it is formed in spaced relationship to the remaining surface or vertical wall of said toe or holder respectively and the other of said V-shaped recess extends from an edge of said toe or holder and orthogonally intersects the first named recess, and wherein one of said pair of V-shaped projections extends across the width of said toe or holder surface on which it is formed in spaced relationship to the remaining surface or vertical wall of said toe or holder respectively and the other of said pair of V-shaped projections extends from an edge of said toe or holder and orthogonally intersects the first named projection; and

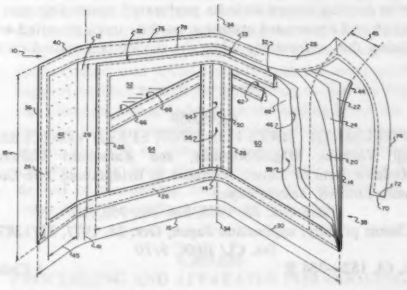
aperture means formed through said toe and said holder base at the intersection of said V-shaped projections and at the intersection of said V-shaped recesses for receiving bolt means for demountably securing said toe to said holder.

4,209,048

FLOATABLE FABRIC WALLET

Michael S. Sandos, Salt Lake City, Utah, assignor to Bear Body, Inc., Salt Lake City, Utah

Filed Feb. 9, 1978, Ser. No. 876,212
Int. Cl.[2] A45C 1/06
U.S. Cl. 150—38 10 Claims



1. A wallet comprising:

a back piece substantially rectilinear in shape and having an inner fabric liner and an outer fabric layer sized substantially the same,

a fabric inner piece substantially rectilinear in shape and secured along three edges thereof to said back piece to form a currency pocket sized in width and length to receive paper currency, said back piece and said inner piece being foldable about a major axis approximate the lengthwise midpoint of said inner piece, said inner piece being sized in length less than the length of said back piece and secured thereto thereby providing an extension of the back piece forming a flap foldable around a minor axis adjoining the transverse edge of said inner piece said minor axis being generally parallel to said major axis; and

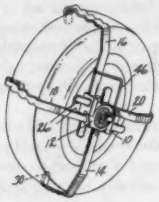
latching means secured to said back piece along opposite transverse edges thereof to latch said opposite transverse edges together when said back piece is folded into two adjacent halves about said major axis, said latching means comprising a coacting pair of velcro strips, one being a threaded surface and one being a hook surface, one of which is secured to the inside of said flap and one of which is secured to the outer fabric layer along the transverse edge opposite the transverse edge of said flap.

4,209,049

TRACTION DEVICES

Joseph Regensburger, Peabody, Mass., assignor to Alpine Industries, Inc., Peabody, Mass.

Filed Aug. 16, 1978, Ser. No. 934,279
Int. Cl.[2] B60C 27/20
U.S. Cl. 152—216 6 Claims



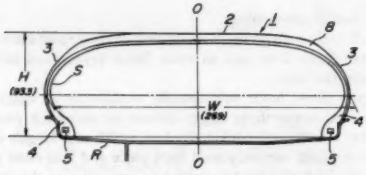
1. A traction device adapted to being mounted on a driving vehicle tire comprising a hub adapted to being positioned generally axially on the outside of the tire, a carrier pivoted on the hub, a first pair of opposed arms slidable in the hub, a second pair of opposed arms slidable in the carrier, each arm extending radially outwardly and being turned to cross the tire tread and extending radially inwardly on the inner side of the tire, means for extending and retracting the arms, and means for locking the carrier against pivotal movement on the hub when the device is in operative position on the tire and the pairs of arms are disposed generally normal to each other said carrier locking means includes perforated upstanding ears on the hub and a rearward extension on the carrier mounted arms entering the perforations when the device is mounted on the tire.

4,209,050

PNEUMATIC TIRES FOR HIGH SPEED VEHICLES

Shoji Yoshida, Higashikurume, and Katsuyuki Harakon, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 953,725
Claims priority, application Japan, Oct. 28, 1977, 52/128745
Int. Cl.[2] B60C 9/10
U.S. Cl. 152—354 R 4 Claims



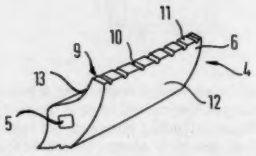
1. A pneumatic tire for high speed running vehicles comprising; a carcass composed of two plies of textile cords having an initial modulus of at least 100 g/denier, said cords being inclined to the equatorial plane of the tire at an angle from 20° to 40° and the cords of one of said plies being crossed with those of the other ply, a tread portion, a pair of bead portions each including bead wires around which is wound each end of said carcass to form a turn-up portion, an aspect ratio of 0.25 to 0.75 defined by H/W where H is the sectional height of the tire and W is the maximum sectional width of the tire, said cords of the carcass having a gap ratio in each ply $(S_1/d)\times 100$ of 10% to 65% and a gap ratio between adjacent plies $(S_2/d)\times 100$ of 22% to 83% where S_1 is a distance between the cords in each ply, S_2 is a distance between the cords in adjacent plies and d is a diameter of the cord, and wherein said cords of the carcass are embedded in a rubber layer having a modulus of elasticity of 300% elongation of 100 kg/cm^2 to 250 kg/cm^2, said turn-up portion having a top end located at a range of 30% to 80% of the sectional height of the tire, and a hard rubber filler interposed between said carcass plies including said turn-up portion.

4,209,051

TIRE HAVING BEADS WITH AIR RELIEF MEANS

William S. Udall, West Midlands, England, assignor to Dunlop Limited, London, England

Filed Dec. 21, 1978, Ser. No. 971,724
Claims priority, application United Kingdom, Dec. 23, 1977, 53822/77
Int. Cl.[2] B60C 15/02, 5/16
U.S. Cl. 152—362 R 18 Claims



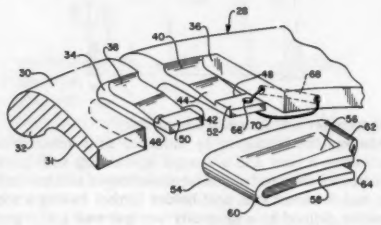
1. A pneumatic tire and wheel rim assembly, said tire comprising a tread portion, a pair of sidewalls and a pair of axially spaced tire beads, each tire bead having an associated substantially inextensible reinforcement and at least one of said tire beads having a circumferentially extending toe made of elastomeric material, said toe extending axially and radially inwards of said tire bead and primary air relief means extending between axially inner and outer surfaces of said toe, said wheel rim having a pair of axially spaced rim bead seats each of which is arranged to receive a respective one of said tire beads and a circumferentially extending groove axially inboard of one of said rim bead seats and arranged to receive said toe whereby said primary air relief means is closed by said groove.

4,209,052

WHEEL FLANGE RETAINING RING

Robert J. French, Wadsworth, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Oct. 23, 1978, Ser. No. 953,505
Int. Cl.[2] B60B 25/18
U.S. Cl. 152—410 6 Claims



1. An improvement in an aircraft wheel assembly, comprising:

a wheel frame having a circumferential groove passing thereabout;

a flange maintained about said frame; and

a continuous ring assembly received by said frame and interpositioned between said flange and frame, said ring assembly including a band having a bulb received within said circumferential groove and first and second ends held together by a clip, said band having a tongue at each said

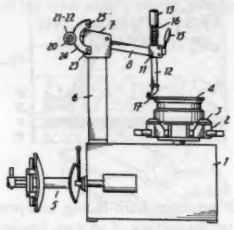
end and including slots therein in juxtaposition to said tongues, said clip being received within said slots and having a bent-tab section in secured engagement with said tongues.

4,209,053

APPARATUS FOR FITTING AND REMOVING AN AUTOMOBILE TIRE

Francis du Quesne, 138, Cleistraat, 2630 Aartselaar, Belgium

Filed Aug. 7, 1978, Ser. No. 931,793
Claims priority, application Belgium, Aug. 10, 1977, 56145
Int. Cl.[2] B60C *25/08*
U.S. Cl. 157—1.24 **7 Claims**



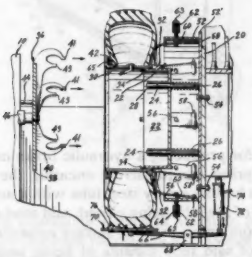
1. Apparatus for fitting and removing an automobile tire, comprising a frame, a table rotatably mounted on said frame and including jaws radially movable for gripping a wheel, means for rotating said table and for radially moving said jaws, a column extending vertically from said frame, an arm carried by and movable with respect to the column, said arm being positioned obliquely with respect to said column and slanting down towards the wheel, a vertical rod carried by and vertically adjustable in height in this rod, a tool carried by the bottom end of said rod for fitting and removing the tire, and means acting between the arm and the vertical column for moving and locking said arm.

4,209,054

APPARATUS FOR REMOVING TIRES FROM THE RIMS OF HEAVY VEHICLES SUCH AS TRUCKS AND BUSSES

Jean-Marc Parent, Rte. 139, Wickham, Co. Drummond, Quebec, Canada (J0C 1S0)

Filed Apr. 5, 1978, Ser. No. 893,808
Int. Cl.[2] B60C *25/06*
U.S. Cl. 157—1.28 **2 Claims**



1. An apparatus for removing tires from heavy vehicle wheel rims having an integral sealing lip on one side and a removable sealing ring secured in place by a locking ring on the other side, said sealing ring having a radially inwardly facing step, comprising:

(a) a frame;

(b) a spring-biased support member axially movably mounted on the frame and adapted to engage the inside diameter of the rim to support the wheel, said support member having a front end and a back end;

(c) abutment means on the back end of said support member engageable with the sealing lip of the rim and retaining the rim in a limit position relative to said support member;

(d) a movable member located on, and movable along, the axis of the support member and facing the front end of said support member and having a first set of fingers and a second set of radially inward fingers respectively arranged on a first and on a second circle perpendicular to said axis and concentric therewith, said fingers of said first set extending beyond said fingers of said second set in the direction of said support member the fingers of said first set having their outer ends radially outwardly spaced from said axis a distance to come in end contact with the portion of said sealing ring which is radially inward of said step and having an axially-extending outer face radially outwardly spaced from said axis a distance such as to have a friction fit with said step of said sealing ring, the fingers of said second set being radially outwardly spaced from said axis a distance to come in end-to-end abutment with said wheel rim;

(e) means for moving said movable member toward and away from the support member; and

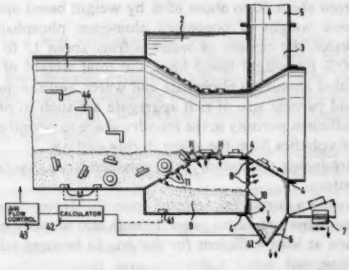
(f) a plurality of finger-like elements mounted on said frame, arranged around said support member and engageable with the side of the tire at said one side of said rim in the rest position of the support member, movement of said movable member towards the support member causing said fingers of said first set to contact the sealing ring and move it inwardly relative to the wheel rim, so as to free the locking rim, thereby permitting removal of the locking ring, and subsequently causing said fingers of said second set to contact said wheel rim and push the same and said support member against the spring bias, so that the finger-like elements will slide between the sealing lip of the rim and the tire to disengage the edge of the tire from the sealing lip, and subsequent movement of said movable member away from the support member causing withdrawal of the sealing ring frictionally engaged by the outer faces of said fingers of said first set.

4,209,055

PROCEEDING AND APPARATUS FOR COOLING, DRYING AND SEPARATING CASTINGS AND FOUNDRY SAND IN A COOLING DEVICE

Eugen Bühler, Schleifweg 3, 8871 Burtenbach, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 961,900
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751500; Nov. 7, 1978, 2848195
Int. Cl.[2] B22D *29/00*
U.S. Cl. 164—4 **18 Claims**



1. A method for cooling, drying and separating casting

pieces and molding sand in a rotating cooling drum, comprising the steps of:

providing a rotatable cooling drum having a perforated portion surrounded by a continuous first chamber;

introducing casting pieces and molding sand into one end of said perforated rotatable cooling drum;

rotating said cooling drum;

advancing the sand and said casting pieces lengthwise through said drum into said perforated portion while simultaneously inducing and regulating air through said cooling drum and said first chamber; separating the traveling sand from said casting pieces in proximity to said first chamber; and

transporting said sand to a stationary chamber.

9. An apparatus for cooling, drying, and separating casting pieces and molding sand, comprising:

a cooling drum open at both ends which is rotatable about its longitudinal axis and having a terminal end wall;

water injection apparatus in said cooling drum;

a perforated area in the cooling drum located forward of the terminal opening;

coupler strips arranged on an interior wall of said drum, and further wherein:

said cooling drum has a terminal portion partially surrounded by a collector chamber which is subdivided by a partially perforated intermediate wall into a first chamber entirely surrounding the perforated wall area of the cooling drum and a second chamber sealed off from said cooling drum, said second chamber having an air intake attachment on an upper end and a closable sand discharge area opening on a lower end.

4,209,056

ALUMINUM PHOSPHATE BINDER COMPOSITION CURED WITH AMMONIA AND AMINES

John J. Gardikes, and Richard H. Toeniskoetter, both of Worthington, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 775,013, Mar. 7, 1977, Pat. No. 4,127,157. This application Sep. 18, 1978, Ser. No. 943,446

The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.

Int. Cl.[2] B22C *1/10, 1/18*

U.S. Cl. 164—16 **32 Claims**

25. A process for the fabrication of foundry shapes which comprises:

(a) mixing foundry aggregate with a bonding amount of up to about 10% by weight based upon the weight of aggregate of a composition which comprises in admixture;

(i) boronated hydrogen aluminum phosphate containing a mole ratio of phosphorus to aluminum of about 2:1 to about 5:1 and from about 3 to about 40 mole percent of boron based on the moles of aluminum, and

(ii) water;

wherein the amount of boronated aluminum phosphate is from about 50 to about 85% by weight based upon the total weight of boronated aluminum phosphate and water, the amount of water is from about 15 to about 50% by weight based upon the total weight of boronated aluminum phosphate and water, and the quantity and particle size of said aggregate are such to provide sufficient porosity in the foundry shape to permit escape of volatiles from the shape during casting;

(b) introducing the foundry mix obtained from step (a) into a pattern;

(c) flowing a curing gas selected from the group consisting of ammonia and amine gases through said foundry mix for a time at least sufficient for the mix to become self-supporting; and

(d) thereafter removing the shaped foundry mix of step (c) from the pattern.

4,209,057

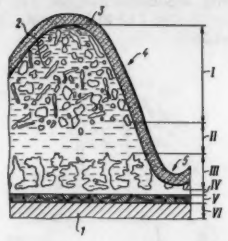
METHOD FOR INDUCTION HARD-FACING

Valentin N. Tkachev, ulitsa Sadovo-Spasskaya, 21, kv.102, Moscow; Boris M. Fishtein, prospekt Voroshilovsky, 89/80, kv. 49, Rostov-na-Donu; Viktor D. Vlasenko, ulitsa Semashko, 50, kv. 48, Rostov-na-Donu, and Nikolai V. Kazintsev, 14 linia, 35a, Rostov-na-Donu, all of U.S.S.R.

Filed Jan. 18, 1978, Ser. No. 870,501

Int. Cl.[2] B22D *19/08*

U.S. Cl. 164—51 **2 Claims**



1. A method for induction hard-facing, comprising applying a powder charge on the surface of an item, heating said item in the electromagnetic field of an inductor until the powder charge is converted to a melt composed of a hard alloy and a slag, said molten hard alloy being acted upon through the slag layer by a tool the surface thereof facing the melt being provided with peaks and valleys to form the item with peaks comprising hard structural constituents of the melt and with valleys comprising plastic constituents of the melt, the item then being cooled and the action of the tool continued until the hard alloy solidifies completely.

4,209,058

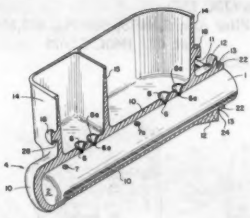
PROCESS FOR PRODUCING MASTER CYLINDERS

George T. Spalding, Monroe City, Mo., assignor to Diemakers, Inc., Monroe City, Mo.

Filed Jul. 6, 1976, Ser. No. 702,880

Int. Cl.[2] B22D *19/02, 19/08*

U.S. Cl. 164—100 **9 Claims**



1. A method for producing a hydraulic brake master cylinder which comprises compressively encasing the outer wall and one end of a hollow empty steel tube with a metal casting, the encased end of the tube being closed, said steel tube having a substantially continuous external surface extending throughout the length of said tube capable of being uniformly subjected to externally applied pressure to substantially uniformly reduce in diameter throughout said length, wherein said tube has a bore therein for at least one hydraulic brake piston, said method including placing said tube in a permanent casting die the interior surface of which defines the exterior surface of said master cylinder and filling the die with a die casting metal having a specific gravity below about 7 while said metal is in a molten state, followed by cooling of said metal and recovery of

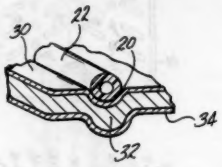
a die casting having said tube and said end encased therein, said permanent casting die having at least one inward projection which extends to the surface of said tube, and wherein a casting is recovered having a channel which extends from the outside thereof to an opening in the wall of said tube in registration with said projection during the casting and cooling of said die casting metal.

4,209,059

CREVICE-CORROSION RESISTANT ALUMINUM RADIATOR TRICLAD COMPOSITE

William H. Anthony, Manchester, Mo., and James M. Popplewell, Guilford, Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 11, 1978, Ser. No. 968,290
The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.
Int. Cl.² F28F *19/06*
U.S. Cl. 165—1 **11 Claims**



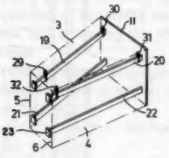
1. A triclad composite metal article having improved resistance to crevice corrosion in aqueous environments comprising an aluminum core, an aluminum brazing alloy metallurgically bonded to said core and a sacrificial aluminum cladding bonded to the other side of said core, said sacrificial alloy cladding consisting essentially of from 0 to 0.1% magnesium, 0.8 to 1.2% manganese, 0 to 0.1% chromium, 0 to 0.05% silicon, 0 to 0.05% copper, 0.1 to 0.4% zinc, 0 to 0.1% titanium, 0 to 0.1% iron, balance essentially aluminum.

4,209,060

PACK, COMPRISING A STACK OF ABUTTING RECTANGULAR PLATES, INTENDED FOR A REGENERATIVE HEAT EXCHANGER, AND A METHOD OF MANUFACTURING SUCH A PACK

Hakan Wiking, and Bo Johnsson, both of Göthenburg, Sweden, assignors to Lars Wiking, Göthenburg, Sweden

Filed Sep. 7, 1978, Ser. No. 940,235
Claims priority, application Sweden, Sep. 16, 1977, 7710409
Int. Cl.² F28D *19/04*
U.S. Cl. 165—8 **8 Claims**



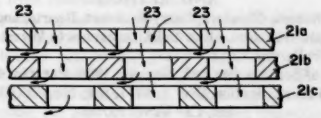
1. A pack containing a stack of abutting, rectangular plates (11,12; 13,14) intended for placing in a compartment defined by radial (9,10) and tangential (7,8) walls in a regenerative heat exchanger, said plates being so profiled that they form passages between two parallel end surfaces (3,4) for a heat-exchanging medium, there being means including tension rods for keeping the plates together in the pack and means for lifting the pack, characterized in that said means for keeping the plates together consist of a plurality of mutually parallel tension rods (19,20,21,22) taken through mutually registering holes (15,16,17,18) in the respective plates, said holes having substantially the same size and shape as the cross-sectional area of the associated tension rod, that each rod at its extremeties has rigid securing means (23,27) coacting with the outer plates of the stack, arranged to hold the plates pressed against each other, and that a plurality of lifting eyes are arranged on one or more of the tension rods.

4,209,061

HEAT EXCHANGER

Arnold J. Schwemin, Danville, Calif., assignor to Energy Dynamics, Inc., Oakland, Calif.

Filed Jun. 2, 1977, Ser. No. 802,637
Int. Cl.² F28D *17/00*
U.S. Cl. 165—10 **5 Claims**



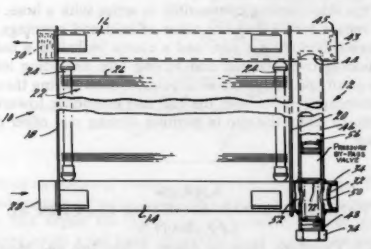
1. A heat exchanger, comprising a housing adapted for generally axial flow of a working fluid therethrough, a plurality of heat exchanger plates supported in said housing in spaced, parallel relationship, a plurality of holes disposed in each of said plates, generally parallel to the axis of said housing and arrayed in matrix format, each of said plates being angularly offset a predetermined amount about said axis from the adjacent plates, said matrix format of said holes being identical in all of said plurality of plates, and said predetermined amount of angular offset is equivalent to an approximately 2% misalignment of said holes in adjacent plates.

4,209,062

HEAT EXCHANGER CONSTRUCTION

Ivan D. Woodhull, Jr., Flat Rock, Mich., assignor to Karmazin Products Corporation, Wyandotte, Mich.

Filed Feb. 10, 1978, Ser. No. 876,669
Int. Cl.² G05D *15/00*
U.S. Cl. 165—38 **26 Claims**



1. In a heat exchanger having an inlet header, an outlet header, a core assembly comprising a plurality of restricted fluid passageways extending between said inlet and outlet headers, and heat radiating fins surrounding said plurality of fluid passageways, an integral pressure responsive by-pass means comprising:

a continuous elongated one piece hollow member extending between and interconnecting said inlet and outlet headers;

a generally cylindrically shaped stop member secured within said hollow member between said inlet and outlet headers, said stop member having an opening therein through which fluid may flow;

a self-contained pressure relief valve disposed entirely within said hollow member between said inlet and outlet

headers and being operative to allow fluid flow between said inlet and outlet headers in response to a pressure differential between said inlet and outlet headers greater than a predetermined magnitude,

a resilient biasing member engaging one end of said pressure relief valve and being operative to bias the other end of said pressure relief valve into engagement with said stop member;

opening means provided in said heat exchanger for enabling said pressure relief valve to be inserted into said hollow member; and

removable closure means for sealingly closing said opening means.

4,209,063

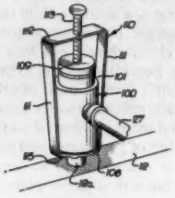
ENGINE COOLING SYSTEM FLUSHING APPARATUS AND METHOD

John A. Babish, Glendora; Larry K. Arnot, Duarte, and Douglas C. Appel, Glendora, all of Calif., assignors to Wynn Oil Company, Fullerton, Calif.

Division of Ser. No. 741,065, Nov. 11, 1976, Pat. No. 4,109,703. This application Dec. 1, 1977, Ser. No. 856,537

Int. Cl.² F28G *15/00*

U.S. Cl. 165—95 **4 Claims**



1. A three-way adapter assembly for use in combination with a liquid coolant heat transfer radiator for an engine driven vehicle, the radiator having an access port for passage of coolant to flow between the radiator and engine, the assembly comprising

(a) a tubular body having opposite ends defining openings, and a side opening,

(b) one of said ends sized for connection to said radiator in registration with said port,

(c) the side opening connectible in series with a hose, and

(d) means for closing the other of said end openings, said means including a cap, and a clamp including a bail extending over the cap and having legs extending lengthwise of said body, and an adjustable stem having threaded interengagement with the bail and extending toward the cap to retain the cap in position closing said other opening.

4,209,064

PANEL-TYPE RADIATOR FOR ELECTRICAL APPARATUS

Philip A. Cacalloro, Newton; Albert J. McCloy, and Moreland P. Bennett, both of Hickory, all of N.C., assignors to General Electric Company, Philadelphia, Pa.

Filed Aug. 25, 1978, Ser. No. 936,983

Int. Cl.² F28F *3/12*

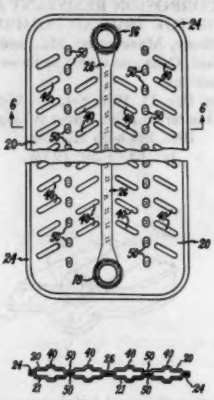
U.S. Cl. 165—130 **7 Claims**

1. In a panel radiator comprising a generally vertically-extending panel for extracting heat from liquid flowing therethrough, said panel comprising:

(a) two dished metal sheets welded together around their perimeters, said perimeters defining the outer edge of the panel and the sheets defining spaced walls of the panel,

(b) said sheets having generally vertically-extending debossments generally aligned with respect to each other and welded together at their inner ends along a generally vertically-extending zone, thus providing spaced, side-by-side, generally vertically-extending flow channels between said sheets on opposite sides of said vertically-extending zone,

(c) means defining an inlet opening at the upper end of said panel through which liquid can enter said panel before flowing downwardly through said flow channels, and means defining an exit opening at the lower end of said panel through which liquid can exit from the panel after flowing through said flow channels, and



(d) the portions of said sheets defining the walls of said channels being provided with vertically-spaced embossments projecting toward the exterior of said panel and arranged on each sheet in a generally herringbone pattern, with the individual embossments extending transversely of said vertically-extending zone via a path that slopes upwardly as said vertically-extending zone is approached.

4,209,065

THERMAL-OPERATED VALVE FOR CONTROL OF COOLANT RATE OF FLOW IN OIL WELLS

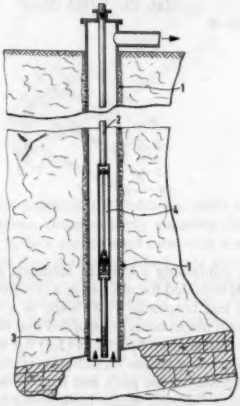
Pierre Ledent, Tilff, Belgium, assignor to Institut National des Industries Extractives, Liege, Belgium

Filed Nov. 13, 1978, Ser. No. 960,098

Claims priority, application Belgium, Nov. 16, 1977, 46232

Int. Cl.² E21B *43/00*

U.S. Cl. 166—64 **5 Claims**



1. A thermally operated valve for automatic control of the

rate of flow of a fluid coolant for hot gases produced by underground gasification of solid fuel deposits or by in situ combustion in oil wells, incorporating a temperature-sensitive element comprising a metal tube several meters long to be incorporated in a pipe for supplying coolant to the well, and a rod of a metal having a low coefficient of expansion coaxial with the pipe, the upper end of which rod is attached to the upper part of the metal tube and the lower end of which rod is connected to a valve member by a connecting element having adjustable clearance or play, the metal tube is lined with a layer of impermeable material having a low coefficient of thermal conductivity.

4,209,066

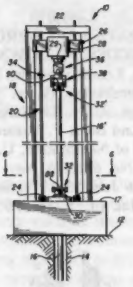
METHOD AND APPARATUS FOR RUNNING TUBULAR GOODS INTO AND OUT OF A BOREHOLE

Barry R. Watson, P.O. Box 756, Monahans, Tex. 79756

Filed Nov. 17, 1978, Ser. No. 961,570

Int. Cl.[2] B25B *13/50*; E21B *19/06*

U.S. Cl. 166—315 **13 Claims**



7. In a rig for forming borehole operations, said rig having a power head, and an elevator support means at the floor thereof, the method of running tubular members into and out of the borehole comprising the steps of:

(1) removably attaching a lower elevator to the upper end of a pipe string which is located in the borehole, and engaging the string with sufficient force to prevent rotation thereof respective to the floor of the rig, while the elevator also supports the string at the floor of the rig;

(2) removably attaching an upper elevator to the upper end of a joint of pipe;

(3) removably attaching said upper elevator to the power head so that rotation of the head causes relative rotation between the joint and the string;

(4) adding said joint of pipe to the string by manipulating the head until the upper end of the string and the lower end of the joint are mated, and screwing the joint onto the string by rotating the head;

(5) removing the lower elevator, lowering the head until the upper elevator supports the string at the floor, thereby becoming a lower elevator;

(6) attaching an elevator other than the last said lower elevator to another joint of pipe;

(7) removably attaching the elevator of step **6** to the power head so that rotation of the head causes relative rotation between the last said joint and the string;

(8) adding the last said joint to the string by manipulating the head until the upper end of the string and the lower end of the joint are mated, and screwing the joint onto the string by rotating the head;

(9) continuing in the above manner until the string is made up.

13. In a drilling rig for performing wellbore operations, wherein the rig has a rotatable, traveling power head for attachment to the upper end of a pipe joint, and support means located on the rig floor for supporting the upper end of a pipe string which extends downhole into a borehole, the combination with said drilling rig of pipe handling apparatus;

said pipe handling apparatus comprises an upper and a lower elevator, each of said elevators having means by which it can be removably attached to the upper end of a pipe joint;

means on each of said elevators for preventing relative rotation between a pipe joint and the elevators, and for engaging and lifting a pipe joint;

an adaptor means; opposed, outwardly extending lug means on each of said elevators by which the adaptor means engages the upper elevator and enables rotation of the power head to rotate said upper elevator, so that the upper elevator imparts axial rotational motion into the pipe joint; said lug means also enables said lower elevator to engage the support means at the rig floor to prevent the pipe string from rotating;

whereby said upper elevator can be attached to the upper end of a pipe joint, the adaptor means can be connected to the elevator and to the power head so that when the power head lifts the joint to cause the axial centerline of the pipe joint and pipe string to lie along a common axial centerline, the pipe joint can be rotated respective to the pipe string by the power head to thereby make up or break out the pipe string while going into and out of the borehole.

4,209,067

DRAFT CONTROL AND TAIL BEAM DEVICE FOR GROUND WORKING DISCER TYPE AGRICULTURAL IMPLEMENTS AND THE LIKE

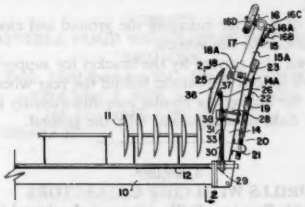
Erhard Poggemiller, Luseland, and Ralph W. Sweet, Forgan, both of Canada, assignors to Kep Enterprises, Luseland and Sweet Manufacturing Ltd., Forgan, both of, Canada

Filed Sep. 21, 1977, Ser. No. 835,048

Claims priority, application United Kingdom, Sep. 23, 1976, 39532/76

Int. Cl.[2] A01B *25/00, 61/04*

U.S. Cl. 172—190 **44 Claims**



1. In an agricultural implement which includes a main frame, ground engaging tools on said main frame, means to raise and lower and adjust the depth and penetration of said ground engaging tools, a tail beam extending at an angle from one end of the main frame and a rudder beam assembly pivoted to the tail beam and including a ground engaging wheel assembly pivotally mounted on said rudder beam assembly, said implement normally being pulled by a tractor or the like at an angle to the direction of travel with the ground engaging wheel in trailing relationship to the implement and assisting in maintaining the said angle of travel, and a source of hydraulic fluid under pressure; the improvement comprising in combination a coulter assembly mounted on the inside of said tail beam, said coulter assembly including coulter means, means mounting said coulter assembly to said tail beam for pivotal action whereby said coulter means moves in a substantially vertical plane, and means operatively connecting said coulter assembly with said means to raise and lower said ground engaging tools whereby said coulter means is raised and lowered simultaneously with said ground engaging tools, said coulter assembly

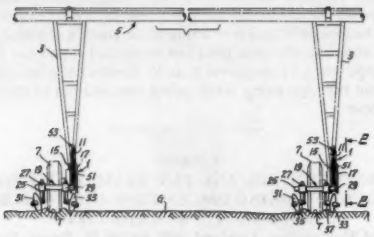
including a crank arm assembly pivotally mounted for movement in a substantially vertical plane, to said tail beam, said crank arm assembly including a coulter means supporting arm forming one arm of said crank arm assembly and a substantially vertically situated control arm forming the other arm of said crank arm assembly, means to mount said coulter means support arm for fore and aft adjustment relative to said vertically situated control arm and means to maintain said coulter means substantially vertically when operating.

4,209,068

TRACK CLOSING ATTACHMENT FOR A MOBILE GROUND IRRIGATION TOWER

Joseph L. Corsentino, Rte. 1, 5487 Road T, Wiggins, Colo. 80650

Filed Apr. 6, 1978, Ser. No. 894,021
Int. Cl.[2] A01B *37/00*
U.S. Cl. 172—572 **12 Claims**



1. A track closing attachment mounted on mobile wheel-supported ground irrigation towers comprising:

(a) a pair of wheels, a front wheel mounted on the forward position of the tower and a rear wheel mounted on the rearward portion of the tower and wherein the tower moves in the direction of the forward wheel,

(b) a bracket for securing the attachment to the tower adjacent to the rearward wheel, and extending rearwardly thereof,

(c) a pair of disks for engaging the ground and closing the track formed by the wheels,

(d) a pivotal arm carried by the bracket for supporting the disks in a spaced disposition behind the rear wheel, and

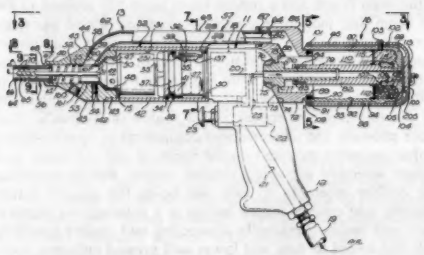
(e) means for biasing the pivotal arm downwardly to maintain the disks in engagement with the ground.

4,209,069

DRILLS WITH CHIP COLLECTORS

Bruce W. Smith, Pacoima, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Sep. 3, 1974, Ser. No. 502,901
Int. Cl.[2] B25D *17/14*
U.S. Cl. 173—75 **18 Claims**



1. A portable drill comprising:

a body containing a motor;

a rotary chuck driven by said motor and adapted to hold a drill bit at a forward end of the body, and to turn the bit about an axis;

a shroud disposed about said chuck and drill bit at said forward end of said body;

a chip receptacle removably carried by said body at an opposite rear end of the body, rearwardly beyond said motor;

a handle projecting from said body intermediate said shroud and said receptacle;

a vacuum pump carried by said body and driven by said motor for producing a primary flow of air;

aspirator means carried by said receptacle and energized by said primary flow of air to induce a flow of secondary air and entrained chips from the vicinity of said drill bit through said shroud and then rearwardly to said receptacle; and

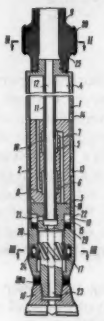
means for causing said primary flow of air to circulate past and cool said motor prior to discharge to atmosphere.

4,209,070

AIR-OPERATED SELF-PROPELLING ROTARY-PERCUSSIVE DOWNHOLE DRILL

Boris V. Sudnishnikov, Krasny prospekt, 56, kv. 59; Veniamin V. Kamensky, ulitsa Derzhavina, 19, kv. 70; Eduard P. Varnello, ulitsa Dzerzhinskogo, 3, kv. 19; Sergei K. Tupitsyn, ulitsa Zorge, 123, kv. 31, and Boris V. Nazarov, ulitsa Meditsinskie kadry, 4, kv. 18, all of Novosibirsk, U.S.S.R.

Continuation of Ser. No. 632,170, Nov. 14, 1075, abandoned.
This application Jan. 10, 1978, Ser. No. 868,464
Int. Cl.[2] E21B *1/06*
U.S. Cl. 173—78 **16 Claims**



1. An air-operated self-propelling rotary-percussive downhole drill for drilling boreholes, comprising: a housing having a head portion and a tail portion; a tool mounted in the head portion of said housing, said housing accommodating therein a striking mechanism with a striker actuated by compressed air through working and idle reciprocatory strokes, to effect a percussive action upon said tool for breaking rock at the hole face and upon said housing of the drill to propel said drill in the hole; means for rotating said tool including a self-controlled coupling having a stationary sleeve and a movable sleeve and means for transmitting a torque to said tool in only one direction of rotation, said stationary sleeve being integral with said housing of said drill; return means accommodated in the forward part of said housing of said drill for withdrawing said tool from the face after it has been struck by said striker, said return means being integral with the tail of the working tool and comprising a piston defining a chamber between the piston and the front wall of the housing, means providing constant communication between said chamber and a source of compressed air and periodic communication with the atmosphere through an opening provided in the housing; means arranged

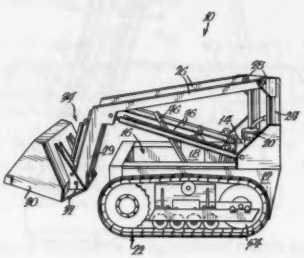
adjacent to the tail part of said housing of the drill and connected therewith, for preventing a rearward motion of the housing and its rotation during a drilling operation, the latter said means being constituted as a resilient tubular member; and means for air-blasting the face area and for removing sludge from the hole.

4,209,071

CONTROL MECHANISM FOR SKID STEER VEHICLE

Paul R. Schuck, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed May 1, 1978, Ser. No. 901,688
Int. Cl.[2] B62D *11/02*
U.S. Cl. 180—6.48 **4 Claims**



1. In a vehicle having: a body with first and second ground engaging members on opposite sides of said body; an engine; first and second infinitely variable displacement fluid motors respectively having output shafts connected to said first and second ground engaging members to drive said members and respectively having a control element extending therefrom; first and second reversible variable displacement pumps for respectively supplying pressurized fluid to said motors; and control means for said motors and pumps, said control means including separate manual control members respectively cooperating with said variable displacement pumps for controlling the amount and direction of fluid flow from said pumps to respective motors, including means for setting said separate manual control members in a position corresponding to the maximum fluid flow output from said pumps to said motors driving said vehicle in the forward direction; and including a control mechanism cooperating with both of said motors for simultaneously varying the speed of both output shafts of said fluid motors, said control mechanism including: a first link of fixed length having one end universally connected to one of said control elements; a second link of fixed length having opposite ends respectively connected to the first link and the other of said control elements; a single manually operated actuating member connected to said first link; and means for mounting said actuating member on said body, said actuating member moving through a range of positions corresponding to the lowest to the highest speed settings of said motors, any one of said infinite number of speed settings of said motors being selected by the vehicle operator by locating said actuating member in a selected position corresponding to a desired speed setting of said motors, the speed of said vehicle being determined by said manual control members and said control mechanism.

4,209,072

VEHICLE DRIVE AND SUSPENSION SYSTEM

Nicolae Orlandea, Davenport, Iowa, and Jack C. Wiley, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed May 30, 1978, Ser. No. 910,661
Int. Cl.[2] B60G *19/00*; B60K *17/32*
U.S. Cl. 180—245 **11 Claims**

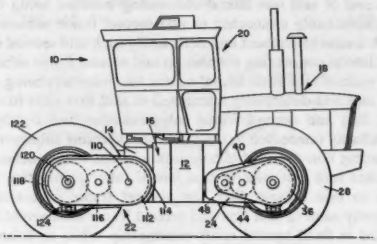
1. A drive and suspension system for an engine driven four-wheel drive vehicle which encounters high impact shock torques while traversing rough terrain, comprising:

(a) first and second pairs of ground engaging drive wheels;

(b) first and second pairs of axles respectively connected to said first and second pairs of drive wheels for rotating said drive wheels;

(c) first and second pairs of connecting drive means respectively connected to said first and second pairs of axles for rotating said axles;

(d) main drive means carried by said four-wheel drive vehicle and driven by said engine, said main drive means comprising first and second output means respectively



connected to said first and second pairs of connecting drive means for rotating said drive means;

(e) first and second pairs of drive supporting means carried by said four-wheel drive vehicle and pivotal proximate said first and second output means for rotatably carrying said first and second pairs of connecting drive means;

(f) pairs of beam means pivotally secured to said four-wheel drive vehicle and comprising first and second ends proximate said first and second pairs of drive support means; and

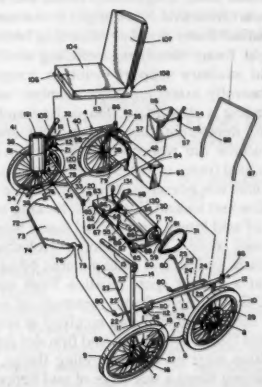
(g) first and second pairs of suspension means respectively connecting said first and second ends of said beam means to said first and second pairs of drive supporting means.

4,209,073

COLLAPSIBLE FOUR WHEEL ELECTRIC POWERED VEHICLE

Clarence Enix, 1500 Brandon Rd., Joliet, Ill. 60436

Filed Mar. 1, 1978, Ser. No. 882,507
Int. Cl.[2] B60K *1/00*; B62M *1/14*
U.S. Cl. 180—65 R **12 Claims**



1. A vehicle powered by an electrical source, including a frame assembly which may be manually assembled and disas-

sembled, a first frame sub-assembly, a second frame sub-assembly manually connectable to and manually disconnectible from said first frame sub-assembly, a plurality of wheels for said vehicle, at least one of said wheels being part of said first frame sub-assembly and at least one of said wheels being part of said second frame sub-assembly, lateral connecting members between said first and second sub-assemblies, said lateral connecting members including respective first ends and second ends, said first end of at least one of said lateral connecting members being pivotally and non-detachably connected to said first frame sub-assembly, including non-detachable connecting means to non-detachably connect said first end of said lateral connecting member to said first frame sub-assembly, said second end of said one lateral connecting member being rigidly and detachably connected to said second frame subassembly, latch means to connect and detachably lock said second end of said lateral connecting member to said second frame subassembly, each of said other lateral connecting members being pivotally and non-detachably connected at said first ends to one of said first and second frame sub-assemblies and rigidly and detachably connected to the other of said frame subassemblies, including non-detachable connecting means to non-detachably connect said first ends of said lateral other connecting members to one of said first and second frame subassemblies, whereby each of said first and second frame subassemblies are locked in fixed spaced apart relationship when so connected and prevented from movement toward or away from each other, said lateral connecting members being non-detachably and pivotally connected to one of said frame sub-assemblies when said frame sub-assemblies are disconnected from each other.

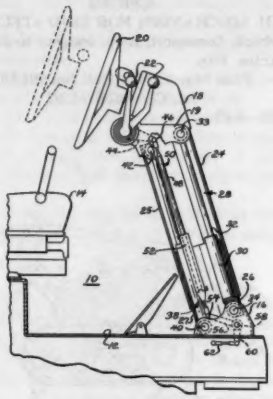
11. A vehicle powered by an electrical source, including a frame assembly which may be manually assembled and disassembled, a first frame sub-assembly, a second frame sub-assembly manually connectable to and manually disconnectable from said first frame sub-assembly, a plurality of wheels for said vehicle, at least one of said wheels being part of said first frame sub-assembly and at least one of said wheels being part of said second frame sub-assembly, wherein said first frame sub-assembly includes a front wheel and a rear wheel for one side of said vehicle, a said second frame sub-assembly includes a front wheel and a rear wheel for the opposite side of said vehicle, lateral connecting members between said first and second sub-assemblies, wherein said first and second frame sub-assemblies each includes a lower longitudinal frame member extending between the extended axes of said front wheel and said rear wheel, a first upright frame member extending upwardly from said lower longitudinal frame member near one end thereof, a second upright frame member extending upwardly from said lower longitudinal frame member at a location spaced apart from said first upright frame member, and an upper longitudinal frame member extending between first and second upright frame members, including auxiliary support members, said auxiliary support members comprising a first and second laterally extending plate member, said first plate member including a depending flange, first and second slot means in said depending flange at spaced apart locations thereon to receive the respective adjacent portions of said lower longitudinal frame members in said slot means, said first and second frame sub-assemblies being receivable in respective ones of said first and second slot means, locking means to lock said portions of said lower longitudinal frame members in said slot means; said second plate member including third and fourth slot means, said second plate member being mounted on said vehicle at a spaced apart location from said first plate member, said first upright frame members of said first and second frame sub-assemblies being received in respective ones of said third and fourth slot means, said first slot means opening along the bottom edge of said depending flange, said second slot means opening along a side edge of said depending flange, whereby said first plate member may be held more securely against movement relative to said lower longitudinal frame members when locked thereon.

4,209,074

ADJUSTABLE CONTROL CONSOLE

Lyle E. York, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1979, Ser. No. 38,985
Int. Cl.[2] B62D *1/18*; B60K *26/00*
U.S. Cl. 180—78 **6 Claims**



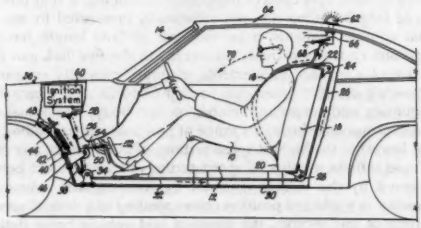
1. An adjustable control console for a vehicle or the like including a base for attachment to a vehicle, a member, rigid mounting links pivotally interconnecting the base and the member in a manner like that of a parallelogram linkage to allow fore and aft movement of the member, at least one control element movably mounted on the member, and a rigid control link connected to the control element and extending therefrom toward said base, said links being selectively simultaneously extensible to allow adjustment of the spacing between said member and said base.

4,209,075

AUTOMOBILE SAFETY ASSEMBLY

Frank Messina, 533 Prospect, Kansas City, Mo. 64124

Filed Oct. 30, 1978, Ser. No. 955,637
Int. Cl.[2] B60R *21/10*
U.S. Cl. 180—268 **10 Claims**



1. A safety system for an automotive vehicle having control means, said system comprising:

a flexible shoulder strap having one end thereof fastened to the vehicle adjacent the driver;

a spring interconnecting the vehicle and the opposite end of the strap remote from the driver;

said strap extending obliquely across the chest of the driver, thence over one of his shoulders, then downwardly along the back of the driver's seat and then under said seat toward the spring whereby tension will be applied to the

strap against the action of the spring in the event the driver slumps in said seat; and

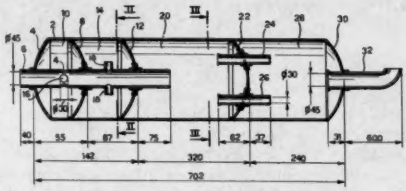
means operably coupling the strap with said control means for deactivating the vehicle when said tension is applied to the strap.

4,209,076

EXHAUST SILENCER FOR AN AGRICULTURAL TRACTOR

Luigi Franco, Turin, and Giorgio Bertotti, Vinovo, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Apr. 27, 1979, Ser. No. 33,929
Claims priority, application Italy, May 17, 1978, 53327/78[U]
Int. Cl.² F01N *1/08*
U.S. Cl. 181—272 **3 Claims**



1. Exhaust silencer for an agricultural tractor having a diesel engine with a cylinder capacity between 2.5 and 4 liters and a power rating of about 50–75 HP, comprising:

a hollow tubular body of elliptical cross-section;

respective end-walls closing the opposite ends of said body;

an induction pipe, a portion of which traverses one said end-wall, and

an exhaust gas outlet pipe traversing the other said end-wall, wherein the improvements consists in said silencer body having internal dimensions of 195 millimeters along a larger axis, 90 millimeters along a smaller axis, a length of 702 millimeters and comprising:

a first dished baffle-plate located 55 millimeters from said one end-wall;

a first resonance chamber defined by said one end-wall and said first baffle-plate;

a second dished baffle-plate located 87 millimeters from said first baffle-plate;

a second resonance chamber defined by said first and second baffle-plates;

a third dished baffle-plate located 320 millimeters from said other end-wall;

a first gas expansion chamber defined by said second and third baffle-plates;

a second gas expansion chamber defined by said third baffle-plate and said other end-wall;

two tubular ducts supported by said third baffle plate and having respective internal diameters of 30 millimeters and respective centres lying on said larger axis at a distance of 45 millimeters on each side of said small axis, each said duct extending for a length of 62 millimeters into said first expansion chamber and for a length of 37 millimeters into said second expansion chamber,

and wherein:

said resonance and expansion chambers are arranged in series longitudinally of said body;

said portion of said induction pipe has an internal diameter of 45 millimeters and extends through said resonance chambers to said first expansion chamber, projecting into the latter for a length of 75 millimeters;

said portion of said induction pipe has respective aperture means communicating with the respective said resonance chambers, and

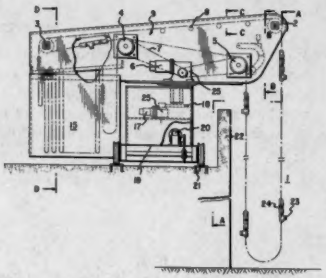
said exhaust gas outlet pipe has a portion which extends into said second expansion chamber for a length of 31 millimeters, said outlet pipe extending beyond said other end wall for a length of 600 millimeters.

4,209,077

ESCAPE DEVICE FOR USE IN MULTISTORIED BUILDINGS

Makoto Yui, 509, 18, 2, Uzugamoridai, Higashinada-ku, Kobe city, Hyogo, Japan; Katsuyuki Sadakane, 403, 33, 8 Chaenba-cho, Akashi city, Hyogo, Japan, and Hidemasa Okazaki, 4765-55, Chaenba, Najio, Shiose-cho, Nishinomiya-city, Hyogo, Japan

Filed Jan. 9, 1979, Ser. No. 2,082
Int. Cl.² A62B *1/00*
U.S. Cl. 182—42 **3 Claims**



1. An escape device for use in a multistoried or high-rise building, which device is provided on a roof of said building for emergency use, comprising:

first and second driving sprockets;

third and fourth idle sprockets;

a ladder type endless chain trained around said first and second driving sprockets, as well as said third and fourth idle sprockets;

a ladder-type-endless-chain housing positioned between said first driving sprocket and said fourth idle sprocket but below said first and said fourth sprockets; and

a chain-lift prime mover for driving said first and second driving sprockets in the both normal and reverse rotational directions;

whereby in the event of an emergency, said ladder type endless chain admitted in said housing may be suspended between said second driving sprocket and said third idle sprocket, due to said first and second driving sprockets being driven by said chain-lift prime mover and then said ladder type endless chain may be continuously paid out to descend a looped chain-lift portion.

4,209,078

ADJUSTABLE LADDER LEVELING DEVICE

Werner Gerber, Parry Sound Rd. N., Rosseau, Ontario, Canada (P0C 1J0)

Filed Jul. 31, 1978, Ser. No. 929,216
Int. Cl.² E06C *7/44*
U.S. Cl. 182—203 **3 Claims**

1. An adjustable ladder device attachable to a lower portion of a leg to lengthen said leg so that the ladder may be supported on an inclinded surface, comprising

a vertical sleeve,

a vertical extension vertically movable in said sleeve and fitted at its lower end with support means,

adjusting means extending from said sleeve, which adjusting means engage said extension for regulating the vertical displacement of the lower end of said extension below said sleeve, with

said sleeve fitted with a pair of spaced upper and lower securing plates, together with a bracket that is bolted to

each said plate such that a section of the lower portion of a ladder leg may be clamped between the plates of said sleeve and each of said brackets, with

each bracket formed with a horizontal portion having a

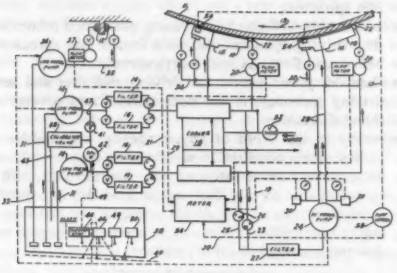
groove for receiving a portion of a rung of an attached ladder, together with means to adjust the spacing between said brackets, so that the horizontal portion of each bracket may bear against an individual rung of an attached ladder, when the device is clamped about a ladder leg.

4,209,079

LUBRICATING SYSTEM FOR BEARING SHOES

Gerard Marchal, Hellemes; Gilles Dumez, Lille, and Bernard Deschamps, Villeneuve d'Ascq, all of France, assignors to Fives-Cail Babcock, Paris, France

Filed Mar. 27, 1978, Ser. No. 890,210
Claims priority, application France, Mar. 30, 1977, 77 09447
Int. Cl.[2] F01M *9/00*; F16N *17/00*
U.S. Cl. 184—6.1 **10 Claims**



1. A lubricating system for bearing shoes having gliding surfaces supporting a heavy element of large diameter for rotation about an axis thereof in one direction, the bearing shoes having an upstream end and a downstream end, in said direction, and defining a lubricating oil basin therebetween, which comprises

(a) a low pressure lubricating oil pump operable to deliver lubricating oil to the upstream end of the bearing shoes during the rotation of the heavy element,

(b) a high pressure lubricating oil pump operable to deliver lubricating oil to the basin at the start of the rotation,

(c) means for operating the high pressure pump, and

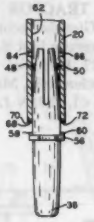
(d) thermocouple means arranged to measure the temperature of the bearing shoes close to their gliding surfaces, the thermocouple means controlling the operating means for actuating the high pressure pump in response to a temperature sensed by the thermocouple means exceeding a first set value.

4,209,080

SNAP-FIT LUBRICANT PICK-UP TUBE FOR A MOTOR COMPRESSOR

James L. Douglas, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 16, 1978, Ser. No. 961,104
Int. Cl.[2] F04B *39/02*
U.S. Cl. 184—6.16 **12 Claims**



12. In a compressor, the method of assembling a centrifugal lubricating device comprising:

providing a depending shaft in said compressor adapted to be rotated about its longitudinal axis by said compressor, said shaft including an open hollow lower end with an inner surface and a locking opening in said surface,

providing a centrifugal-type lubricant pick-up tube being bifurcated at one end along the longitudinal axis thereof with the furcations forming a pair of resilient locking arms, at least one of the arms including a locking nib adapted to lock together with the locking opening,

inserting the tube locking arms into the shaft lower end with the arms being deflected inwardly by the shaft inner surface,

axially aligning a pair of locating elements on the shaft lower end and the pick-up tube, respectively, and

radially aligning the locking nib and locking opening whereupon the locking nib snaps into the locking opening as the arms snap outwardly, thereby locking the tube in place.

4,209,081

CONSTANT PRESSURE LUBRICATOR FOR BEARINGS

Ronald P. Murro, Martingale Rd., Amherst, N.H. 03031

Filed Oct. 18, 1978, Ser. No. 952,312
Int. Cl.[2] F16N *11/04*
U.S. Cl. 184—41 **9 Claims**

3. A lubricator for dispensing grease under constant pressure to a bearing said lubricator comprising;

an elongated housing having an anchor bolt extending across one end and having an opposite end;

an elongated container within said housing having one end affixed to said anchor bolt and having a grease discharge conduit at its opposite end extending out of said housing intermediate of the length thereof for discharge of grease to a bearing;

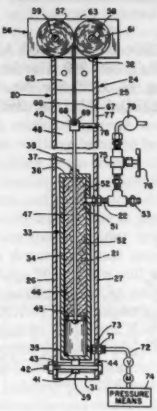
a piston head within, and normally proximate said one end of said container;

a piston rod having one end affixed to said head and extending through said opposite end of said container to a clevis coupling outside said container;

a charge of grease within said container in the space between said head and said opposite end of said container; and

a frame affixed to said opposite end of said housing, said frame supporting a pair of back to back, constant pressure, coiled, band springs, each having a straight unwound

portion juxtaposed to the other, the terminal tips thereof being secured to said coupling within said housing for



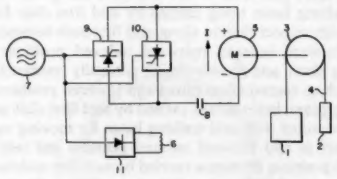
exerting a constant tension on said piston head to dispense grease at a constant pressure.

4,209,082

ELEVATOR CONTROL APPARATUS

Nobuo Anzai, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1977, Ser. No. 807,640
Claims priority, application Japan, Jul. 6, 1976, 51/80104
Int. Cl.[2] B66B *5/02*
U.S. Cl. 187—29 R **1 Claim**



1. An elevator control apparatus comprising: a thyristor power rectifier connected to an AC power source and for driving a DC motor for cage drive;

a power stoppage detector for detecting the power stoppage of the AC power source; and

a circuit including a capacitor and switching elements connected with said capacitor, said circuit being connected across said thyristor power rectifier,

wherein, before a cage starts its travel, said capacitor is charged through said thyristor power rectifier, with the polarity which depends on the traveling direction of the cage and, at the power stoppage, said capacitor is discharged through said thyristor power rectifier, in response to a switching operation of said switching elements, to inversely bias said thyristor power rectifier and to thereby turn it off; said switching elements being connected across said thyristor power rectifier to form at least two opposing current paths for regenerative current delivered from said DC motor, and each of said two opposing current paths having at least two thyristors connected therein;

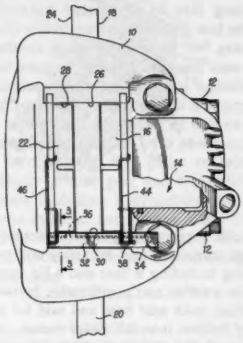
said circuit further including a resistive impedance for restricting the regenerative current delivered from said DC motor when power stoppage occurs in the regenerative braking mode.

4,209,083

DISC BRAKE AND A GUIDE KEY FOR SUCH A BRAKE

Jean-Louis Gerard, Paris, France, assignor to Societe Anonyme DBA, Paris, France

Filed Nov. 15, 1978, Ser. No. 960,980
Claims priority, application France, Nov. 17, 1977, 77 34537
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.6 **11 Claims**



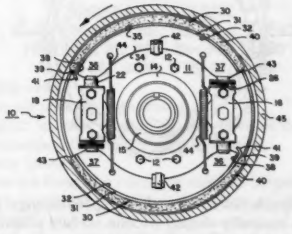
1. A disc brake comprising a torque-absorbing member associated with operating means capable of urging at least one friction member on to a brake disc, said brake disc being rotatable about an axis of rotation, the friction member cooperating with the circumferentially spaced edges of an aperture formed in the torque-absorbing member by way of at least one guide key, characterized in that the key comprises at least one recess permitting radial extraction of the friction member through the aperture when the friction member is situated opposite the recess, the key being linearly shiftable in a direction substantially parallel to the axis of brake disc rotation between an operative position, in which the recess is offset relative to the friction member, and a removal position, in which the recess is situated opposite the friction member.

4,209,084

BRAKE SHOE

David E. Peck, Beverly Hills, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 20, 1977, Ser. No. 844,096
Int. Cl.[2] F16D *65/08*
U.S. Cl. 188—250 D **15 Claims**



4. A brake shoe comprising an elongate curved table, a web secured along a substantial length of the radially inner surface of said table, and at least one edge of said table extending longitudinally beyond one end of said web is bent inward to

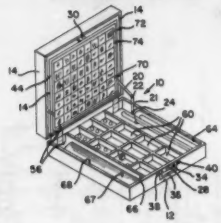
form a lip transversing said table and structurally reinforces said edge portion of said table.

4,209,085

PORTABLE RECREATIONAL PRODUCT ASSEMBLY

Eileen N. Kozan, 1121 45th Ave. N., St. Petersburg, Fla. 33703

Filed Sep. 5, 1978, Ser. No. 939,436
Int. Cl.[2] A45C 3/00, 13/00
U.S. Cl. 190—51 10 Claims



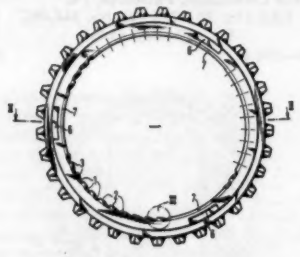
1. A portable recreational product assembly convertible to a conventional container, said assembly and container comprising: a housing including a base and a lid means movably connected to one another and positionable between an open and a closed position, both said base and said lid means including a substantially hollow interior, panel means, pivotally mounted on the interior of said housing and disposed in segregating relation between predetermined portions of said housing interior; said predetermined portions of said housing interior comprising a primary storage area and a secondary storage area disposed in substantially segregated relation to one another on opposite sides of said panel; said panel means positionable between at least a partially closed and an open relation to said secondary storage area, whereby articles of diverse size and shape may be maintained and removed from each of said primary and secondary storage areas.

4,209,086

SYNCHROMESH GEAR

Rudolf Friedrich, Röthenbach, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,146
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 2810945
Int. Cl.[2] F16D 13/74
U.S. Cl. 192—53 F 6 Claims



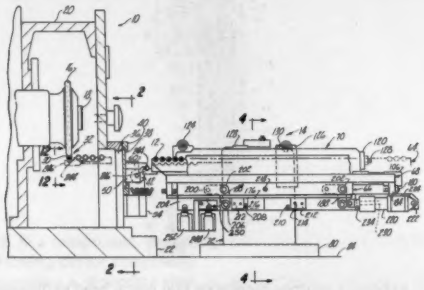
1. In a synchromesh gear for a speed-change gear drive including a conically-shaped friction surface adapted for frictional engagement with a smooth counter cone, said conically-shaped friction surface being in the shape of sharp-edged teeth each having a frictional surface and oil evacuating grooves separating said teeth, the improvement comprising: said teeth being arranged in said conically-shaped friction surface and obliquely extending at an angle in the range of 10 to 70 degrees relative to the direction of the generatrix of said conically-shaped friction surface.

4,209,087

WORKPIECE FEED AND REMOVAL MECHANISM

Anthony Kushigian, P.O. Box 768, Hendersonville, N.C. 28739

Filed Aug. 16, 1978, Ser. No. 934,196
Int. Cl.[2] B23Q 5/22, 7/00; B65G 47/00
U.S. Cl. 198—339 14 Claims



1. A mechanism for loading workpieces into a machine tool and removing processed workpieces from the machine tool comprising: a base; a first slide carried by said base for reciprocal movement relative to said base on a generally horizontal extending first path between spaced apart extended and retracted positions of said slide; a plurality of workpiece supports equally spaced apart generally in one direction along said first path and carried by said first slide for movement therewith relative to said base; a walking beam having at least one processed workpiece cradle adjacent one end thereof and a plurality of workpiece cradles with all of said cradles being equally spaced apart generally in one direction along said first path; said walking beam being carried by said first slide for movement with respect thereto along said first path between spaced apart forward indexed rearward indexed positions of said walking beam, and for movement generally transverse to said first path to spaced apart raised and lowered positions of said walking beam; index means carried by said first slide and operably connected with said walking beam for moving said walking beam to said forward indexed position and said reverse indexed position; lift means carried by said first slide and operably connected with said walking beam for moving said walking beam generally transverse to said path to said raised position to thereby disengage workpieces from said workpiece supports and to said lowered position to deposit at least some of the workpieces carried by said walking beam on said workpiece supports; said processed workpiece cradle being constructed and arranged to lie beyond all of the workpiece supports containing a workpiece when said walking beam is in its reverse indexed position; means for operating said index means; means for operating said lift means; actuator means operably connected with said first slide for moving said first slide to said extended and retracted positions of said first slide; and said index means, lift means and actuator means constructed and arranged such that with said slide in its said retracted position and said walking beam in its said reverse indexed and lowered positions, said actuator means causes said first slide to move to its said extended positions so that said processed workpiece cradle on said walking beam is located directly below a processed workpiece releasably carried by a workpiece holder in a work station of the machine too; with said first slide in its said extended position, said lift means causes said walking beam to move to its said position while disengaging workpieces from said workpiece support and receiving such workpieces cradles of said walking beam; with said first slide extended, said walking beam raised, and a pro-

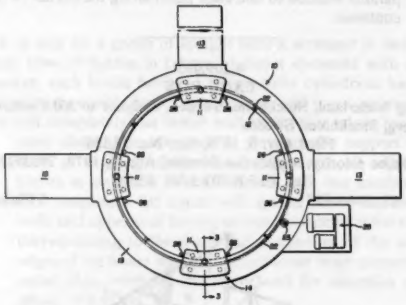
cessed workpiece released from such work station of the machine tool and received in said processed workpiece cradle of said walking beam, said index means causing said walking beam to move to its said forward indexed position to locate in such work station of the machine tool a workpiece carried by said walking beam to be engaged and retained by such workpiece holder; with said first slide in its said extended position, said walking beam in its said forward indexed position, and such workpiece located by said walking beam in such work station engaged and retained by such workpiece holder, said lift means causes said walking beam to be lowered sufficiently to disengage said walking beam from such workpiece retained by such workpiece holder and to provide sufficient clearance for said walking beam and such processed workpiece received in said processed workpiece cradle to pass by such workpiece engaged by such workpiece holder without engaging such workpieces, and to deposit at least some of the workpieces carried by said walking beam onto said workpiece supports in an advanced position relative to the position from which said walking beam previously disengaged such workpieces from said workpiece supports; and with said first slide in its said forward indexed position and said walking beam in its said lowered position, said indexed means moves said walking beam to its said reverse indexed position and said actuator means moves said first slide to its said retracted position so that both said walking beam and such processed workpiece carried by such walking beam are removed from such work station of the machine tool and said walking beam is returned to its lowered and reverse indexed positions.

4,209,088

MACHINE TOOL

Andrew V. Siarto, West Bloomfield, Mich., assignor to Siarto Machine & Tool Co., Inc., Novi, Mich.

Continuation of Ser. No. 801,181, May 27, 1977. This application Oct. 16, 1978, Ser. No. 951,700
Int. Cl.[2] B65G *21/20*
U.S. Cl. 198—345 **2 Claims**



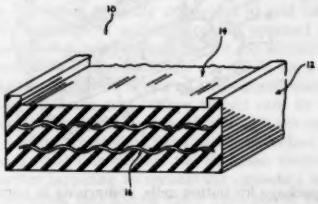
1. In a machine tool having a machining station, a support having an upper horizontal support surface, an annular transport gear overlying said support surface, drive means for rotating said gear in a horizontal plane about a vertical axis, a pallet for supporting a part to be machined at said machining station and normally carried by said gear for rotational movement therewith, means interconnecting said pallet and said gear for joint rotational and vertical movement, said interconnecting means including lost motion connection means for providing limited horizontal and vertical movement of said pallet relative to said gear, a plurality of spaced bearing elements carried by said support surface and engaging the undersurface of said gear to support the gear normally in spaced relation above said support surface, a plurality of cam recesses in the undersurface of said gear spaced at the intervals of the bearing elements and simultaneously registerable with said spaced bearing elements to accommodate downward movement of said gear, a plurality of embossments secured to said pallet, a plurality of abutment surfaces located adjacent said machining station and positioned intermediate said support surface and said pallet, said abutment surfaces being engageable with complementary abutment surfaces on said embossments upon the initial entry of said bearing elements into said cam recesses to thereby support the pallet independently of said gear upon downward movement of the gear, said gear being movable vertically upward to rotate on said bearing elements above said support surface and said pallet being supported by said interconnecting means until said cam recesses become registerable with said bearing elements which brings said pallet into rough alignment with the machining station upon downward movement of said gear, indexing means for adjustably and accurately locating said pallet against said abutment surfaces independently of the gear after the initial entry of said bearing elements into said cam recesses at said machining station, said indexing means including a cylindrical head having a tapered surface which is engageable with a complementary tapered surface in one of said embossments, said cylindrical head being actuable by a piston-cylinder, and clamping means for clamping said pallet to said abutment surfaces independently of said gear and its indexed position, said clamping means including a cylindrical head which is actuable by a piston-cylinder and having a flat undersurface which is engageable with a complementary flat surface of another of said embossments to finally fix and clamp said pallet at said machining station.

4,209,089

COMPOSITE FEEDER BELT

John T. Day, Westminster, Md., assignor to Rubber Millers, Inc., Baltimore, Md. and Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 6, 1978, Ser. No. 949,054
Int. Cl.[2] F16G *1/00*
U.S. Cl. 198—847 **15 Claims**



1. A feeder belt for transporting and handling minerals and the like comprising a urethane body having a free floating reinforcement encapsulated therein extending generally along the line of travel of said belt.

4,209,090

DISPLAY PACKAGE

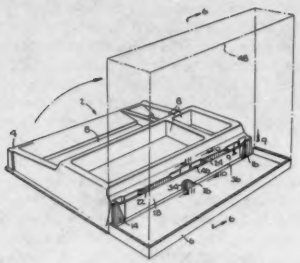
Herbert S. Klein, 5 Horizon Rd., Fort Lee, N.J. 07024

Filed Mar. 27, 1979, Ser. No. 24,407
Int. Cl.[2] B65D *5/66, 25/14*
U.S. Cl. 206—45.28 **3 Claims**

1. A display package comprising;
a container member provided with cavities contoured to accommodate the article being displayed;
a separate cover;
means in the form of a retaining member hingedly attached to the cover for attaching the cover to the container member;
a recess in the container member adapted to securely grip the retaining member of the cover;
overlapping edge members at each end of the recess in the container member;
depressions in the recess directly below each of the overlapping edge members;

intermediately disposed protuberances at the top of the recess in the container member;

a centrally disposed tab extending upwardly from the bottom of the display container recess; and wherein



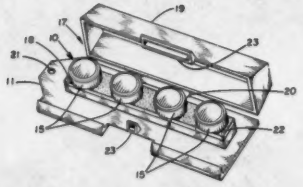
the retaining member is configured in the size and shape of the recess in the container member and is provided with inclined edges.

4,209,091

BUTTON CELL PACKAGE AND METHOD OF MAKING SAME

Walter G. Lieberman, Minneapolis, Minn., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 10, 1978, Ser. No. 932,733
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—333 **18 Claims**



1. A package for button cells, comprising in combination:

(a) housing means having a base member and a cover member cooperating therewith;

(b) a laminated assembly comprising: said base member; a resilient member attached to and overlying said base member; a barrier film attached to and overlying said resilient member; and a pressure-sensitive adhesive layer attached to and overlying said barrier film and having an exposed surface for receiving a button cell; and

(c) a button cell in releasable adhesive contact with the exposed surface of said adhesive layer whereby the profile of said button cell is better accommodated by the resilient member.

4,209,092

PLANT CONTAINER

Roy Jones, Medford, Oreg., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 26, 1978, Ser. No. 972,946
Int. Cl.[2] B65D *85/52*
U.S. Cl. 206—423 **10 Claims**

1. A container suitable for receiving and transporting plants and adapted to be formed from a common sheet of material, said container comprising:

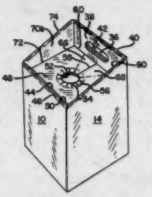
front and back panels and side panels hingedly connected therebetween to form a substantially vertical container structure of rectangular cross section,

panel means for closing the bottom of said container structure,

a re-entrant flap hingedly joined to the top edge of said front panel and adapted to be turned downwardly within said container structure,

a top panel hingedly connected to the remaining side of said re-entrant flap and positioned by said re-entrant flap below the top edge of said front panel to provide a recessed portion of said container above said top panel, said top panel being provided with a plant receiving aperture,

and side gussets hingedly connected to sides of said top panel and top edges of said side panels, each of said side gussets



being reversely folded downwardly between said top panel and said side panels along a diagonal fold line making an acute angle with side edges of said top panel for positioning said top panel in substantially perpendicular relation to said front, back and side panels,

wherein said gussets between sides of said top panel and said diagonal fold line are triangular in shape, each having a side extending the side of said top panel remote from said flap, the remainder of each of said gussets being trapeziform in shape having a straight outer edge joining the extended side of the triangular section to the top edge of a said side panel and positioned along and in adacent parallel relation to said back panel along the corner of the container.

4,209,093

CARD BOX

Bengt Söderland, Stockholm, Sweden, assignor to AB Gustavsberg, Stockholm, Sweden

Filed Apr. 5, 1979, Ser. No. 27,356
Claims priority, application Sweden, Apr. 7, 1978, 7803922
Int. Cl.[2] B65D *5/48, 85/00*
U.S. Cl. 206—425 **6 Claims**

1. A rectangular box adaptable for storing cards or the like of varying sizes comprises a rectangular traylike box member having a length dimension and a width dimension which is less than the length dimension, said box member having a rectangular bottom, a pair of sides extending along and upwardly from the length dimension side of said bottom, and a second pair of sides extending along and upwardly from the width dimension sides of said bottom, a series of holes formed in said bottom along each of the length dimension and width dimension sides thereof, at least one movable support having a width dimension and a height dimension with the width dimension corresponding to one of the interior length and width dimensions of said box member, said support having a lower edge extending

in the width dimension direction thereof, a pin located on each end of the lower edge of said support member and said pins being removably insertable into the holes in said bottom for tiltably supporting said support therein and for selectively positioning said support within said box member, the ratio of the interior length dimension to the interior width dimension of said box member is substantially the same as the ratio of the height to width of the largest card to be stored in the box so that the box can be arranged to file cards in one or more rows with the number of rows depending on the size of the cards and with the rows extending in one of the directions of the length dimension and of the width dimension of said box member, and said holes in the bottom of said box member are uniformly spaced apart and symmetrically arranged along the length and width dimension sides of the bottom.

4,209,094

BOTTLE TRAY

Ray E. Bly, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Filed Jan. 19, 1979, Ser. No. 4,899
Int. Cl.[2] B65D *75/00, 61/00*
U.S. Cl. 206—427 **4 Claims**

1. A tray for a group of upright bottles arranged in two or more rows of bottles in tangential direct abutment with one another, each bottle having a substantially cylindrical barrel extending upwardly from a tapered keel, said tray comprising:

a stiff completely flat lower wall with outer edges having outer dimensions adequate to elevationally support the heels of a group of bottles arranged with all adjacent bottles in tangential direct abutment with one another;

a stiff completely flat upper wall spaced above the lower wall; said upper wall having an outer circumferential edge corresponding to the shape and dimensions of the outer edges of the lower wall and a continuous inner circumferential edge overlying the lower wall for reception of a group of bottles;

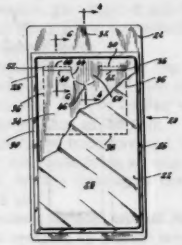
side and end wall means integrally joining the outer edges of said lower and upper walls in positions where the lower and upper walls are parallel to one another and vertically separated by a distance less than the height of the barrel of an individual bottle; the inner circumferential edge of said upper wall defining an open unobstructed scalloped pattern having an arcuate scalloped edge configuration complementary in both size and shape to the size and shape across a portion of the barrels of the individual bottles, said pattern being repeated continuously about the periphery of the inner edge of said upper wall in a spatial arrangement complementary to the location of individual bottles bordering a group, whereby an arcuate portion of the barrels of the bottles bordering each group supported on said lower wall will be frictionally engaged by said upper wall to maintain the group of bottles within said tray by assuring tangential engagement of adjacent bottles with one another.

4,209,095

CLOSURE FOR BLISTER CARD TYPE CONTAINER

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 7, 1979, Ser. No. 36,788
Int. Cl.[2] B65D *73/00, 5/54, 65/18*
U.S. Cl. 206—469 **1 Claim**



1. An easy opening, recloseable container comprising:

a generally trough-shaped plastic blister enclosure having a front portion and a tubular side wall, said blister enclosure further including a peripheral flange circumscribing the edges of said tubular side wall;

a generally rectangular unitary paperboard card having front and rear surfaces with said blister enclosure being bonded to the front surface of said card along the peripheral flange thereof thereby forming a wall of said container and sealing said blister enclosure, said card further including a generally rectangular closure flap disposed in the central portion of said card and spaced inwardly away from said tubular side wall of said blister enclosure, said closure flap being defined by a pair of cut lines along two opposed side edges thereof, with the bottom edge of said closure flap being hingedly connected to said card and with the top edge of said closure flap opposed to said hinge connection being defined by first and second spaced apart pairs of cut lines, with the cut line in each of said spaced apart pairs that is nearest said hinged connection extending from the rear surface of said card to a point intermediate the thickness thereof, and with the other cut line in each pair extending from the front surface of said card to a point intermediate the thickness thereof, said card further including an arcuate cut extending between and connecting said spaced apart pairs of cut lines and defining a shiftable tab, whereby to initially open said closure flap, said shiftable tab is pivoted inwardly into said blister enclosure such that an outwardly biasing force may be applied adjacent said spaced apart pairs of cut lines resulting in the shearing of the paperboard between said pairs of cut lines, which shearing functions to define interlocking, complementary L-shaped locking flaps along both the top edge of said closure flap and the top edge of the access opening defined by said closure flap, said L-shaped locking flaps flexing to allow said closure flap to be pivoted outwardly to its open position, and whereby when said closure flap is subsequently closed and opened, said L-shaped locking flaps flex to allow said L-shaped locking flaps to be respectively interlocked and disengaged.

4,209,096

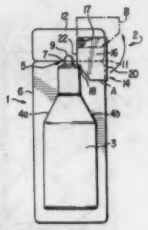
BLISTER CONTAINER HAVING A RECLOSABLE LID ASSEMBLY

Edwin D. Carkhuff, Dunedin, Fla., assignor to Pharmacare, Inc., Largo, Fla.

Filed Mar. 6, 1979, Ser. No. 17,893
Int. Cl.[2] B65D *47/10*
U.S. Cl. 206—621 **19 Claims**

17. In combination, a blister type container comprising a

backing sheet and a blister adhered to the front surface thereof to cooperably define a product enclosure communicating with a nozzle which is rupturable when the backing sheet is bent in one direction toward the back surface of the sheet and along a predetermined bend line, and a separate reinforcing member normally positioned to engage said backing sheet on the back



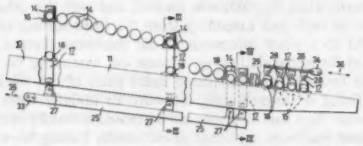
surface thereof to bridge said predetermined bend line, thereby preventing rupture of said nozzle or the dispensing of product through said nozzle, and said member being movable relative to the backing sheet to engage said sheet solely on one side of said bend line, thereby accommodating rupture of said nozzle or dispensing of product through the nozzle upon bending of said backing sheet.

4,209,097

SCREEN

Per-Olle Nordmark, and Robert Drugge, both of Malmberget, Sweden, assignors to Luossavaara-Kiirunavaara Aktiebolag, Stockholm, Sweden

Filed Sep. 28, 1978, Ser. No. 946,620
Claims priority, application Sweden, Oct. 3, 1977, 7711044
Int. Cl.[2] B07B *1/15*
U.S. Cl. 209—668 **3 Claims**



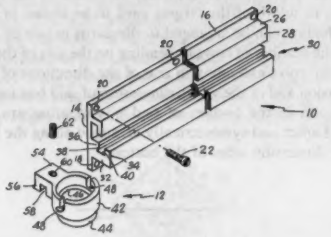
1. A screen whose screening surface is formed by at least one group of mutally parallel rod-like screening elements located beside each other, the screening elements in one and the same group being movable in unison transversely of their longitudinal axis in a manner such as to vary the mesh size whilst maintaining uniform spacing between the screening elements, wherein the screening elements of one and the same group are each mounted on a respective arm arrangement which is mounted to pivot about an axis (**18***a*) extending parallel with the longitudinal axis (**14***c*) of the associated screening element, planes containing the pivot axis (**18***a*) of a respective arm arrangement and the longitudinal axis (**14***c*) of the associated screening element (**14**) being parallel to one another, and wherein the distance between the pivot axis of each arm arrangement and the longitudinal axis (**14***c*) of the associated screening element decreases from arm arrangement to arm arrangement in direct proportion to the distance between the pivot axes of the arm arrangements and wherein means are provided for pivoting the arm arrangements of one and the same group of screening elements in unison through mutually identical angles.

4,209,098

ADJUSTABLE STORAGE SYSTEM FOR FISHING RODS

John R. Adams, 835 Summit Ave., Franklin Lakes, N.J. 07414

Filed May 26, 1978, Ser. No. 909,726
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—60 R **9 Claims**



1. An adjustable storage system for fishing rods which comprises an elongated storage rack and at least one socket member mounted on said rack for longitudinal sliding movement therealong,

said rack comprising a base, a support member projecting from said base with its outer end spaced therefrom, an upwardly opening slot extending longitudinally along said support member, and a downwardly opening hook member projecting from said base and positioned above said support member with the outer end of said hook member spaced inwardly of the outer end of said support member,

said socket member including a mounting bracket projecting therefrom and having a downwardly extending flange receivable in said slot for sliding movement to any selected position therein,

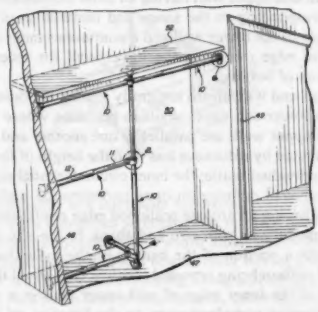
whereby a fishing rod may be carried by said socket and space is provided between said fishing rod and said hook member to permit the insertion of a fishing hook into said hook member.

4,209,099

KIT FOR CLOSET SUPPORTS

Robert R. Wickes, 4237 E. Keim Dr., Paradise Valley, Ariz. 85253

Filed Feb. 27, 1978, Ser. No. 881,751
Int. Cl.[2] A47F *5/13*
U.S. Cl. 211—182 **5 Claims**



1. A kit for increasing the number of garments storable in a suspended position in a closet including a substantially horizontal planar floor member, a planar member spaced above and substantially parallel to the floor member, two substantially vertical planar wall members in spaced parallel relation and a third substantially vertical planar wall member extending

between and normal to said two parallel wall members comprising:

(a) a plurality of bars, each bar having an outer cylindrical tube having a given inner and a given outer diameter, and an inner cylindrical tube having a given inner and a given outer diameter, said inner cylindrical tube being telescopically received in said outer tube with a snug sliding fit;

(b) a plurality of end connectors, each of said end connectors having a plate having a substantially planar surface adapted to engage a planar member defining said closet, means for securing the planar surface of each end connector to a planar member, each plate of each end connector having inner and outer coaxial cylindrical nipples fixedly secured to said plate, the outside diameter of said inner nipple being dimensioned to be substantially equal to the inner diameter of the inner cylindrical tube of a bar, the inside diameter of the outer nipple being dimensioned to be substantially equal to the outer diameter of the outer cylindrical tube of a bar, whereby the inner and outer tubes of a bar are snugly received on said nipples;

(c) a plurality of two-way intersection connectors, each having a pair of cylindrical passages in normal relationship to each other, the diameter of said passages being made substantially equal to the outer diameter of the outer cylindrical tubes of said bars and means for immovably securing to the connectors tubes of bars inserted into the passages of said two-way connector; and

(d) a plurality of three-way intersection connectors, each comprising a body with two cylindrical passages and a cylindrical socket, said passages and socket being normal to each other and having a diameter substantially equal to the outer diameter of the outer cylindrical tubes of the bars and means for immovably securing to the connectors tubes of bars inserted into the passages or socket of said three-way connectors;

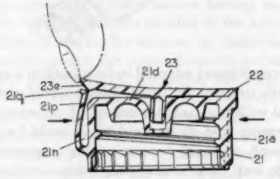
(e) said means for securing tubes of bars inserted into passages or sockets of said intersection connectors including a cylindrical shim having an inner and an outer diameter, said inner diameter substantially equaling the outer diameter of the inner cylindrical tubes of said bars and the outer diameter substantially equaling the outer diameter of the outer cylindrical tubes of the bars and adapted to be slid over the inner cylindrical tubes and to be positioned in a passage or socket of a intersection connector when a portion of an inner cylindrical tube is to be secured to such a connector.

4,209,100

SAFETY CLOSURE

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 1, 1979, Ser. No. 44,871
Int. Cl.[2] B65D *55/02, 85/56;* **A61J** *1/00*
U.S. Cl. 215—216 **12 Claims**



1. A safety closure for a container neck comprising, in combination:

(1) a one piece structure molded from a resilient plastic having an inverted cup-shaped body portion and a locking flap portion connected by an integral hinge to a top corner portion of the inverted cup-shaped body;

(2) means on the annular walls of said body for securing same in sealing relationship to the container neck;

(3) said base portion of the inverted cup-shaped body having at least one aperture therethrough a defining a dispensing outlet for the container contents;

(4) said base portion having a depression in its top surface conforming to the shape of said locking flap;

(5) said locking flap being foldable about the integral hinge to lie in said depression, the edges of said flap being substantially flush with the adjacent top surface of the base of said inverted cup-shaped body;

(6) cooperating locking means on said flap and said base portion for holding said flap in said base depression;

(7) means on said locking flap for sealing said dispensing outlet in the folded position of the flap;

(8) said inverted cup-shaped body having a recess in a portion of its annular wall underlying an edge of said flap in its folded position thereby forming an inwardly depressable wall segment; and

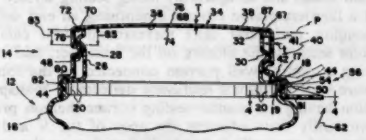
(9) cooperating camming surfaces on said locking flap and said wall segment operable by manual inward depression of said wall segment to elevate at least an edge portion of said flap sufficiently to permit manual lifting thereof to open said dispensing outlet.

4,209,101

TAMPER-PROOF CLOSURE AND METHOD OF MAKING SAME

Gaylord Brown, Beaverton, Mich., assignor to Sweetheart Plastic, Inc., Wilmington, Mass.

Filed Sep. 14, 1977, Ser. No. 833,074
Int. Cl.[2] B65D *41/32*
U.S. Cl. 215—253 **11 Claims**



1. A thermoformed, tamper-proof bottle cap for a plastic container, such as a plastic milk container and the like, having a neck with an external thread and a plurality of circumferentially disposed radially projecting locking teeth, adjacent said external thread, said cap comprising:

a thermoformed topwall;

an annular axially extending thermoformed sidewall, of a predetermined external diameter, having an upper end integral with said topwall and a lower end;

an enlarged diameter thermoformed skirt, integral with said lower end;

said sidewall having a radially inwardly projecting portion defining an internal thread for threadedly mating with said external thread and alternate projecting and recessed portions on axially opposite sides of said inwardly projecting portion defining said internal thread;

said skirt including a radially outer surface and a radially inner surface having a locking projection, extending radially inwardly therefrom, receivable by said locking teeth for preventing rotation, in one direction, of said cap relative to said container;

said skirt including a radially outwardly projecting tear tab, generally radially aligned with said locking projection;

said skirt including tear facilitating means circumferentially adjacent said tab to enhance axial tearing of said skirt circumferentially adjacent said tab and permit said projection to swing radially outwardly relative to said sidewall to a position removed from said teeth so that said cap and container can be relatively rotated;

and a foam liner, lining the inside of said topwall and side-

wall, said foam liner includes an endwall having a central section and a ring portion which encircles said central section, and is bonded to said topwall, said central section being completely free and unattached to said topwall;

the radial thickness of the portion of said sidewall between said topwall and said tear facilitating means, including said projecting and recessed portions and said portion defining said internal thread, being substantially uniform.

4,209,102

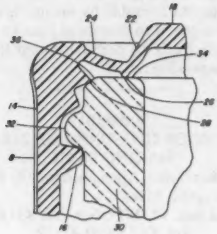
LINERLESS PLASTIC CLOSURE

Lloyd G. Dunn, Richmond, and Wilburn C. Willis, Hagerstown, both of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 816,760, Jul. 18, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,573

Int. Cl.[2] B65D *41/28*

U.S. Cl. 215—329 **10 Claims**



1. In combination a container having a mouth opening with thread means and an upwardly facing sealing surface thereon and a linerless plastic closure comprising an end wall and a depending peripheral skirt therearound with cam means therein securing the closure on the container, said end wall having a central wall portion connected to the top of the closure skirt through a resiliently deflectable V-shaped wall section having an annular sealing corner thereon projecting downwardly from adjacent the apex of the V and sealing against said upwardly facing sealing surface on the container; said closure further having substantially rigid stop means thereon outwardly of said V-shaped wall section in abutting contact againt said container mouth to prevent overtravel of the closure on the container and avoid contact of said V-shaped wall section against said container sealing surface except by said sealing corner.

4,209,103

UTILITY BOX LOCATOR

Lloyd H. Glovier, 150 S. Atlanta St., Apt. 26E, Roswell, Ga. 30075

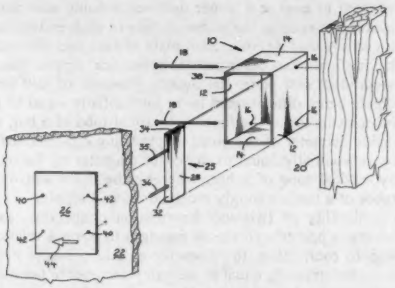
Filed Jul. 7, 1978, Ser. No. 922,564

Int. Cl.[2] H02G *3/08*; G01B *5/14*

U.S. Cl. 220—3.4 **5 Claims**

1. A locator for a utility box mountable to a stud with a box rim of preselected perimeter size and shape about a box opening facing a sheet of wallboard, and with the locator comprising, in combination, a generally rectangular support adapted to be snuggly mounted to the utility box, said support having an edge facing outwardly from the box when mounted on the box, from which support edge first and second projections of mutually different cross-sectional sizes project at a preselected projection spacing, and a template of perimeter size and shape approximating that of the box rim and formed with first and second apertures of sizes closely approximating said cross-sectional sizes of said first and second projections, respectively, and spaced apart a distance closely approximating said preselected projection spacing, whereby said template may only be placed on the support projections in one preselected orientation with the first projection extending through the first aperture and the second projection extending through the second aperture.

5. A locator for a utility box mountable to a stud with a box rim of preselected perimeter size and shape about a box opening facing a sheet of wallboard, and with the locator comprising, in combination, first and second locator projections formed unitarily with and projecting from said box rim and



being of mutually different cross-sectional projection sizes, and a template of perimeter size and shape approximating that of the box rim and formed with first and second apertures of sizes closely approximating said cross-sectional sizes of said first and second projections, whereby said template may only be placed upon said projections in one orientation with the first projection extending through the first aperture and the second projection extending through the second aperture.

4,209,104

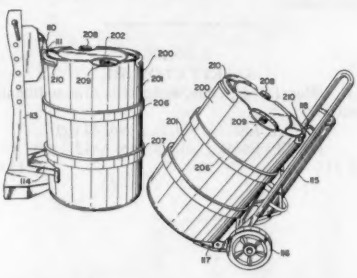
DRUM ASSEMBLIES WITH PREFORMED INSERTS

Charles A. Speas, Towson, Md., assignor to Hedwin Corporation, Baltimore, Md.

Division of Ser. No. 787,153, Apr. 13, 1977. This application Mar. 13, 1978, Ser. No. 885,363

Int. Cl.[2] B65D *7/42, 7/02*

U.S. Cl. 220—71 **10 Claims**



1. A preformed insert adapted to be joined to a corner structure of a plastic drum to facilitate lifting thereof and adapted to be positioned within an arcuate corner of a conventional blow mold for forming said drum, said blow mold having an end wall, a side wall, and said arcuate corner connecting said end wall and side wall, said insert comprising: a relatively broad base, a relatively narrow ridge extending from one side of said base, and a pair of indentations respectively on opposite sides of said ridge extending lengthwise of the ridge, said base having a continuous peripheral edge and being dimensioned to fit across said arcuate corner of said mold with said ridge extending outwardly towards, and no further than, said arcuate corner and with said continuous peripheral edge of said base in

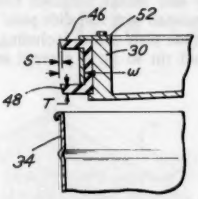
continuous engagement with said mold to seal off at least a portion of said corner of said mold as plastic parison is blow molded in said mold and keep said plastic parison from entering said indentations.

4,209,105

FOLLOWER PLATE WIPER

Cecil G. Dominique, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed Jan. 11, 1978, Ser. No. 868,501
Int. Cl.[2] B65D *53/02*
U.S. Cl. 220—93 **4 Claims**



1. In a follower plate assembly for insertion into a generally cylindrical container such as an industrial drum, said container of the type having a longitudinal axis and also having discrepancies and variations in the shape and condition of the inner side wall of the container, said follower plate assembly being movable by external means along the axis of the container to follow a fluid level in the container, said assembly including a generally flat follower plate having a circumferential outline complementary with the internal outline defined by the inside container wall and also having a plate axis parallel to the longitudinal axis when the plate is in the container, the improvement comprising, in combination:

a flexible circumferential flange assembly incorporated with the plate having means for cooperative sealing engagement with the inside container wall and for also maintaining such engagement when discrepancies and variations appear therein, said flange assembly being defined on and incorporated in the circumference of the follower plate and including

(a) a generally circumferential surface on the plate parallel to the plate axis and a circumferential ledge projecting radially from and unitarily with one edge of the circumferential surface toward the container side wall, the other edge of the circumferential surface providing a surface for receiving a detachably securable flange having a circumferential edge projecting radially from said other edge toward the container side wall and thereby defining means for removably slidably receiving a circumferential seal member;

(b) a separate, elastomeric U-shaped seal member of generally uniform cross section with a transverse, longitudinally extending crown section having an inside and outside surface generally parallel to the axis throughout the extent of said crown section, the inside surface being positioned against the circumferential surface by being slidably positioned on the plate, said seal forming a closed loop extending circumferentially about the plate and also including two integral, radially projecting, substantially identical, spaced lips extending generally perpendicularly from the upper and lower ends of said crown section beyond the radial extent of the ledge and into engagement with the inside wall, said lips being spaced from each other to define the U-shape of the seal member and providing means for flexible circumferential engagement of the radial lips with the inside container wall to accommodate discrepancies and variations in the shape and condition of the inside container wall, one of said lips also being engaged against the ledge to prevent movement of the seal member along the plate axis; and

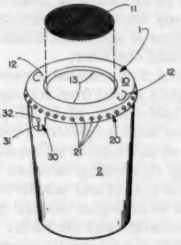
attachment means positoned intermediate the radially projecting lips for engaging and holding the transverse crown section on the circumferential surface and for maintaining the radially projecting lips continuously positioned for sealing engagement with the inside container wall, said attachment means including a closed circumferential band member extending between the lips against substantially the entire outside surface of the crown section bounded by said lips.

4,209,106

CUP TOP REFLECTOR

Alan Rosas, 1650 Alexander SE., East Grand Rapids, Mich. 49506

Filed Jun. 11, 1979, Ser. No. 47,041
Int. Cl.[2] B65D *41/56, 51/28, 51/24*
U.S. Cl. 220—212 **41 Claims**



1. A cup top cover comprising:

a top having a reflectorized surface;

means on said top for securing said top snugly over the top of a cup; and

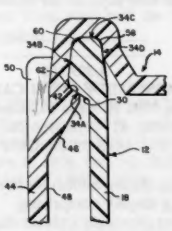
means on said top for securing said top to a bicycle.

4,209,107

CONTAINER WITH VAPOR LOCK CLOSURE

Victor E. Crisci, 49 Heritage La., Leominister, Mass. 01453

Filed Nov. 15, 1978, Ser. No. 960,864
Int. Cl.[2] B65D *43/06, 51/12*
U.S. Cl. 220—306 **4 Claims**



1. A container comprising

a container body; and

a plastic closure;

said container body having a base, an annular side wall with inner and outer surfaces, and an upper edge surface;

said side wall including an annular tapered ridge extending down from said upper edge surface;

said upper edge surface having inner and outer rounded corners;

said ridge having an upper ridge surface extending downwardly and outwardly from said outer corner of said

upper edge and a lower ridge surface extending downwardly and inwardly from said upper ridge surface to said outer surface of said side wall; and a rounded third corner between said upper and lower ridge surfaces;

said closure having an inverted, generally U-shaped annular groove and a closure guide extending outwardly and downwardly from the lower end of the outer wall of said groove;

said groove having an inner wall, an upper wall, an outer wall and a re-entrant wall to define respectively first, second, third and fourth contact surfaces, said surfaces being sized and shaped to sealingly contact said container body at said inner wall surface, said upper edge surface, said upper ridge surface and said lower ridge surface, respectively;

said second contact surface being slightly smaller than said upper edge to cause said first and third contact surfaces to clamp said side wall therebetween;

said third contact surface being slightly smaller than said upper ridge surface to cause said fourth contact surface and said lower ridge surface to generate wedging forces therebetween and drive said closure into tight abutment with said container at said four contact surfaces, securing said closure to said container;

said inner, outer and third rounded corners of said container body being slightly spaced from corresponding corners of said groove of said closure, when said closure is mounted on said container body, to provide a space for adjustment of said groove on said edge of said container body and to assure a sealing relationship between closure and container body at all four of said contact surfaces;

said closure guide including an inclined guide wall portion extending downwardly and outwardly from said groove and also including a vertical wall portion extending downwardly from said inclined guide wall portion, the inner surface of said vertical wall portion being radially outward of the outer surface of said outer wall portion of said groove;

said closure also including a plurality of substantially vertical fins, each of said fins extending radially outward from said outer wall portion of said groove and from said guide wall portion, each of said fins extending upwardly from the outer surface of said guide wall portion, each of said fins having an upper surface positioned below the upper edge of said outer wall portion of said groove, said upper edge of said fins contacting the lower edges of said vertical wall portion of said closure guide when a plurality of said closures are stacked, said upper edges of said fins providing the sole support for successive closures being stacked.

4,209,108

DISPLAY ASSEMBLY WITH CARD EJECTOR

Eugene P. Winans, 7795 E. Napa Pl., Denver, Colo. 80237

Filed Mar. 31, 1978, Ser. No. 892,182

Int. Cl.[2] A47F *3/026;* G07F *11/16*

U.S. Cl. 221—6 **9 Claims**

1. An advertising display cabinet for multiple units each with its own advertising display comprising:

(a) housing means providing a planar display panel and being otherwise closed;

(b) said display panel having a plurality of openings and plug in electric connection means at each said opening;

(c) a complete modular unit including cover means for each of said plurality of openings formed as a replaceable module including electric connection means for connection with said plug in electric connection means;

(d) generally horizontal floor means for supporting a stack of cards, said floor means being planar and smooth to provide low friction between a card and the floor, and provided with a narrow slit adjacent the rear edge of the floor;

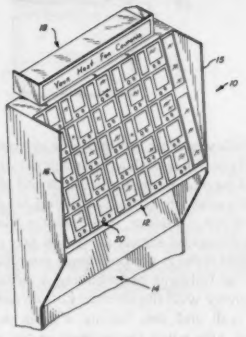
(e) side wall means projecting upwardly from opposed edges of said floor means closely supporting a stack of cards therebetween;

(f) adjustable front panel means forming with said floor means an adjustable card ejector slot being adjustably secured to said side wall means;

(g) means adjustably securing said front panel means to said side wall means, providing a height adjustment of said card ejector slot in relation to said floor means;

(h) slide plate means of the thickness of a card of said stack cards reciprocably mounted on said floor means and having an actuator arm means extending through said narrow slit, said slide plate means mounted at rest at a position spaced from said stack of cards;

(i) said actuator arm means mounted beneath said floor means and connected with said slide plate means for reciprocating said slide plate means including a wide portion mounted in said slit so as to prevent turning said arm means;



(j) push-pull means connected to said actuator arm means for reciprocating said actuator arm means forwardly and rearwardly;

(k) spring biased pressure means for a stack of cards on said floor means holding said stack of cards biased against said floor means and against said front panel means;

(l) actuating means for said push-pull means for reciprocating said actuating arm means and said slide plate for pushing the lower most card from the stack to extend through said card ejector slot;

(m) display means in each said cover means for identifying the information on the cards dispensed by each said single card dispenser whereby each modular unit is a complete replaceable unit, and

(n) each said complete modular unit including low card level indicator means in said cover means for determining a low quantity of cards in each said single card dispenser means.

4,209,109

TUBER PLANTER MONITOR

Robert B. Curl, 1960 Floral Ave., P.O. Box 562, and Fred Foss, 359 Taylor, both of Twin Falls, Id. 83301

Continuation of Ser. No. 769,523, Feb. 17, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,571

Int. Cl.[2] A01C *7/04;* G01F *7/00*

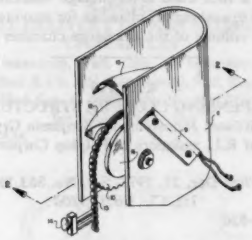
U.S. Cl. 221—7 **5 Claims**

1. In a tuber planter employing a conveyor with feed cups to discharge seed tubers into a furrow, an upper idler sprocket member about which the tuber conveyor moves, a housing enclosing at least a portion of said sprocket, and an electromagnetic monitor comprising:

(a) a reed switch protectively positioned on the interior of said housing closely adjacent one face of said sprocket and housed within one of a pair of curved guard members having a radius of curvature approximating that of the

sprocket circumference wherein said guards are attached to said housing in opposed relationship on opposite sides of said sprocket to form a curved pathway for passage of feed cups traveling about said sprocket;

(b) a permanent magnet protectively encased in a rubger disk member adhered to one face of said sprocket in a



position near the outer circumference of said sprocket whereby it passes closely adjacent to said reed switch once each revolution of said sprocket; and

(c) a fender member which fits secured within said housing in spaced cooperative relationship with said curved guards to form a substantially enclosed passageway for said seed cups traveling about said sprockets.

4,209,110

VENDING MACHINE FOR ARTICLES CONNECTED TO AN ELONGATED MEMBER

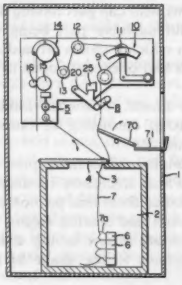
Nobuyasu Ono, 19-3, Tokiwadaira 4-chome, Matsudo-shi, Chiba-ken, Japan

Continuation-in-part of Ser. No. 722,769, Sep. 13, 1976, abandoned. This application Aug. 1, 1978, Ser. No. 930,026

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641306; France, Sep. 13, 1976, 76 27516; Japan, Sep. 14, 1975, 50-111563; Sep. 14, 1975, 50-111564; Jan. 29, 1976, 51-9060; Aug. 14, 1976, 51-97165; Aug. 14, 1976, 51-97166

Int. Cl.[2] G07F *11/68*

U.S. Cl. 221—73 **45 Claims**



1. A vending machine for selling articles by detaching articles which are connected to an elongated member at predetermined intervals, comprising:

draw-up means for drawing up said elongated member during vending;

gate means having therein an opening smaller in size than each of said articles, said gate means being effective to pass said elongated member into said draw-up means through said opening and to block passage of the leading one of said articles to detach said one article from said elongated member as it is drawn up by said draw-up means;

detector means for detecting the detachment of each of said articles from said elongated member by said gate means, and

means responsive to said detector means for stopping the operation of said draw-up means.

4,209,111

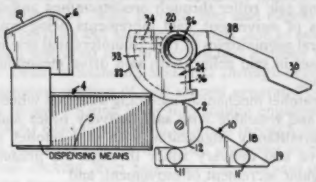
SHELF LOCKING APPARATUS

Joseph A. Lotspeich, South Saint Paul, and Raymond W. Pertinen, Minneapolis, both of Minn., assignors to Gross-Given Manufacturing Company, Saint Paul, Minn.

Filed Oct. 6, 1978, Ser. No. 949,046

Int. Cl.[2] G07F *11/00*

U.S. Cl. 221—75 **9 Claims**



1. An improved vending machine of the type having a housing; at least one shelf movably mounted in the housing for movement between a dispensing position located inside the housing and a loading position located at least partially outside the housing; dispensing means carried in the housing for dispensing products contained on each of the shelves; a front stop located at each side of the housing; a front shelf support member on each side of the shelf normally received in one of the front stops to retain the shelf in the housing in its dispensing position; and wherein the improvement relates to an apparatus for locking the shelf inside the housing, which locking apparatus comprises:

a lock member pivotably mounted in the housing above an adjacent one of the front stops for the shelf, the lock member having a locking surface and being counterweighted such that the lock member normally assumes a first position in which the locking surface interferes with removal of the front shelf support member from the adjacent front stop to thereby lock the shelf in its dispensing position; and wherein the locking member is rotatable a sufficient angular distance to a second position in which the locking surface clears the front shelf support member to allow the front shelf support member to be disengaged from the adjacent front stop and the shelf pulled outwardly in the housing.

4,209,112

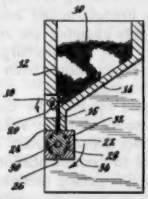
STICK FEEDING APPARATUS

Edward D. Cottrell, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 8, 1978, Ser. No. 913,532

Int. Cl.[2] B65H *3/44*

U.S. Cl. 221—93 **8 Claims**



1. An apparatus for delivering sticks to a predetermined position at a controlled rate comprising:

a hopper having converging sidewalls defining an entry to a delivery chute, said chute being wide enough to accept only one stick at a time;

a delivery roller aligned with said delivery chute, said roller including a plurality of equiangularly spaced recesses extending along the length of said roller for receiving sticks from the delivery chute;

a housing surrounding said delivery roller and having a first opening aligned with said delivery chute and a second opening adjacent the predetermined position, said housing acting to retain each stick in the roller recesses at positions intermediate the first and second openings;

drive means for rotating said roller at a predetermined rate to cause sticks to be delivered to the second opening at the controlled rate, said drive means including means for driving said roller through predetermined angular increments of movement, said increments being equal to or integral submultiples of the circumferential spacing of the recesses in said roller, with said drive means further including,

(a) a ratchet mechanism including a ratchet wheel secured to and rotatable with said delivery roller and a pawl intermittently engageable with said ratchet wheel to drive said delivery roller through the predetermined angular increment of movement; and

(b) hydraulic drive means for reciprocating said pawl along an arcuate path; and

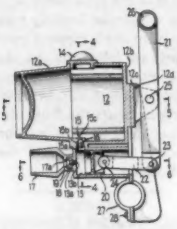
a crank member freely rotatable about the delivery roller axis of rotation, said crank member being pivotally connected to said pawl at a first point and to said drive means at a second point, said drive means comprising a reciprocable hydraulically-driven rod for intermittently moving said crank member through a predetermined arc.

4,209,113

LIQUID EJECTING TOY

Wayne A. Kuna, Elmhurst, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,195
Int. Cl.[2] B05B 9/06
U.S. Cl. 222—79 **8 Claims**



1. A liquid ejecting toy for projecting a stream of liquid from a vehicle, comprising:

unitary structural means defining an upper liquid supply chamber and a lower discharge chamber, said unitary structural means including inlet means at the top thereof for receiving a predetermined amount of liquid in said upper liquid supply chamber and an opening between the supply chamber and the discharge chamber to permit gravity induced flow of liquid from the supply chamber to the discharge chamber;

valve means in said opening for closing and opening in response to pressure buildup when said liquid in said discharge chamber is pressurized;

a discharge nozzle in communication with said discharge chamber having an opening therethrough for discharging liquid in a stream from the discharge chamber to the atmosphere when the liquid in said discharge chamber is pressurized, said nozzle having spring biased valve means for normally closing said opening and adapted to move to permit liquid discharge therethrough when the liquid in said discharge chamber is pressurized; and

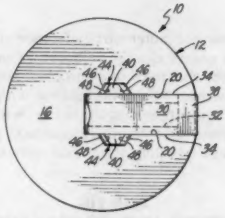
manually operable means for selectively pressurizing the liquid in said discharge chamber, said manually operable pressurizing means including a piston reciprocally mounted in a cylindrical portion of said discharge chamber and a first class lever-linkage mechanism pivotally mounted to said supply chamber for moving said piston to vary the volume of the discharge chamber.

4,209,114

DISPENSING CLOSURE STRUCTURES

Woodrow S. Wilson, Johnston, and Benjamin Gryncewicz, Lincoln, both of R.I., assignors to Polytop Corporation, Slatersville, R.I.

Filed Dec. 22, 1977, Ser. No. 863,402
Int. Cl.[2] B67D 3/00
U.S. Cl. 222—536 **4 Claims**



1. A closure structure having a cap part and a movable part, said cap part having a top shaped so as to include two spaced, aligned bearing means located beneath the upper surface of said top and restricted entrances leading into said bearing means, said restricted entrances leading downwardly to said bearing means from the upper surface of said top, said aligned bearing means having an axis, said movable part extending between said bearing means and including two trunnion means, each of said trunnion means fitting within one of said bearing means, at least said cap part being formed of material sufficiently resilient so that said trunnion means can be snapped into said bearing means, said cap part having an opening extending therethrough, said movable part being movable between a closed position in which it closes off said opening and an open position in which said opening is open in which the improvement comprises:

said material is a hard, somewhat resilient polymer selected from the group consisting of linear polyethylene and polypropylene,

each of said trunnion means having the shape of a surface of revolution which decreases in diameter in accordance with the distance from that portion of said movable part located between said bearing means,

each of said bearing means having a shape which substantially corresponds to the shape of the trunnion means within it,

each of said entrances decreasing in width in accordance with the distance from the space between said bearing means and tapering downwardly into one of said bearing means,

the rigidity of said cap part being such that said movable part is positioned against any movement in the direction of said axis during and after assembly of said movable part on said cap part as a result of the shapes of said entrances, said bearing means and said trunnion means,

said shapes of said entrances, said bearing means and said trunnion means tending to minimize concentrations of stresses and strains and to spread stress and strains radially from the central region of said top during assembly of said movable part on said cap part,

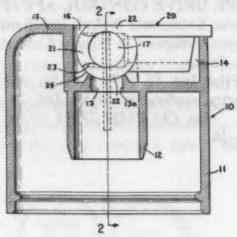
the lengths of said trunnion means being such so as to fit within said bearing means without exerting stress and strains against the ends of said bearing means of smallest dimension.

4,209,115

TWO-PART DELIVERY OUTLET CLOSURE FOR CONTAINERS

Otto Stahl, Finnentrop, Fed. Rep. of Germany, assignor to Georg Menshen & Co. KG, Finnentrop, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,017
Int. Cl.[2] B67D 3/00
U.S. Cl. 222—536 **3 Claims**



1. A two-part delivery outlet closure device for a container having an exterior and an interior and including a portion providing an opening from said exterior into said interior, said outlet closure comprising:

A. a cap part for being placed over and connected to said container portion providing said opening into said container interior, said cap part including:

a. a first portion providing a cap interior for communicating with said container interior;

b. a second portion including an end wall and a pair of opposed side walls, said walls providing a recess for receiving a rocking lever;

c. a third portion providing:

(i) a first axial through-bore extending between said cap interior and said recess and for communicating said cap interior with said recess, said first through-bore having an axis, and

(ii) a generally annular bead surrounding the entrance of said first through-bore into said recess;

d. A pair of opposed axially aligned and cylindrically shaped bearing pins, each pin provided on one of said side walls and extending into said recess, the axis of said bearing pins being normal to and intersecting said first through-bore axis, and said bearing pins having a diameter and being displaced a predetermined distance from said annular bead surrounding said first through-bore; and

B. a pivotable rocking lever for residing in said recess and providing a second axial through-bore having an entrance end and an exit end and said rocking lever for being pivoted between open and closed positions, said rocking lever including:

a. a first generally longitudinally extending portion through which said second axial through-bore extends, said first generally longitudinally extending portion provided with an end into which said exit end of said second axial through-bore opens,

b. a second generally cylindrical portion normal to said first generally longitudinally extending portion and through which said second through-bore extends, said entrance end of said second through-bore opening into the outer surface of said second generally cylindrical portion, and said second generally cylindrical portion provided on the opposite ends thereof with a pair of interrupted, generally annular web portions providing a pair of latch slots the width of which is narrower than said diameter of said bearing pins,

C. at least one of said cap part or said rocking lever being made of a predetermined resilient material whereby said bearing pins can be forced through said latch slots into said web portions of said rocking lever in the manner of snap-fastening, said bearing pins and said web portions providing a bearing system for permitting pivotal movement of said rocking lever with respect to said cap part between said opened and closed positions;

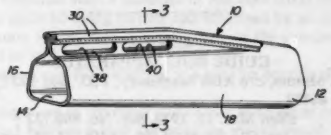
D. said latch slots being substantially parallel with said second through-bore extending through said rocking lever whereby upon said cap part being connected to said container portion providing said opening into said container interior and upon said rocking lever being pivoted into said closed position, said web portions and said bearing pins, due to said bearing pins being displaced said predetermined distance from said annular bead surrounding said first through-bore, force a predetermined portion of said second generally cylindrical portion of said rocking lever into sealing engagement with said annular bead surrounding said first through-bore to seal off said container interior from said container exterior, and, upon said rocking lever being pivoted into said open position, said first and second through-bores being aligned to communicate said container interior with said container exterior.

4,209,116

MISCELLANEOUS ITEMS CARRIER

Charles D. Hendricks, 803 Indiana Ave., LaPorte, Ind. 46350

Filed Oct. 26, 1978, Ser. No. 954,839
Int. Cl.[2] B65D 75/00
U.S. Cl. 224—49 **11 Claims**



1. An elongated carrier for miscellaneous items, said carrier comprising a flexible panel member including upright horizontal spaced apart and horizontally elongated sides interconnected along their lower marginal edge portions by a bottom extending between and anchored relative to said side lower marginal edge portions, an upstanding end wall integral with said bottom wall extending and secured between at least the lower portions of said sides at one end of said carrier, major length portions of the upper marginal edge portions of said sides including stiffening members supported thereby and extending therealong from longitudinal central portions thereof spaced centrally intermediate the opposite end of said carrier toward said end wall, the end of said carrier opposite said end wall being fully open and free of connecting structure extending and connected therebetween and said major length portions being free of connecting structure extending and connected therebetween, whereby when said carrier is placed on a horizontal surface said upper marginal portions adjacent said open end of said carrier may be swung outwardly and downwardly, and when said carrier is to be picked up said central portions may be gripped and swung upwardly and inwardly toward side-by-side positions, the portions of said stiffening members supported by said central portions including means defining elongated horizontal hand grips extending longitudinally of said carrier which register with each other when said central portions are disposed in side-by-side relation, said bottom being slightly downwardly inclined toward said one end of said carrier when said hand grips are horizontally disposed, said central portions being generally centered over the longitudinal center of the interior of said carrier for general

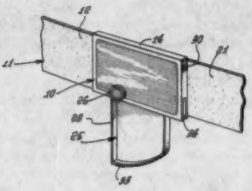
centering over an elongated load supported within said carrier, whereby the downward incline of said bottom wall toward said one end insures that equipment disposed within said carrier wall not fall from the open end thereof.

4,209,117

BELT BUCKLE

Giorgio Corinaldi, Milan, Italy, and Jack Shirinian, Orange County, Calif., assignors to Lejon of California, Inc., Anaheim, Calif.

Filed Nov. 24, 1978, Ser. No. 963,200
Int. Cl.[2] A45C 1/04; A44B 11/22
U.S. Cl. 224—224 **7 Claims**



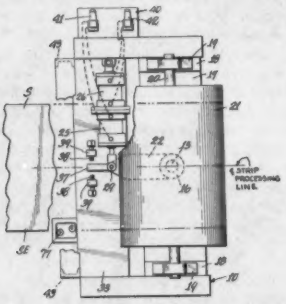
1. A belt buckle comprising:
a housing having front and rear faces and right, left, top and bottom sides;
first and second means carried at said housing for first and second connections, respectively, to a belt;
said housing having an open interior and a slot in one of said sides; and
a tray pivotally mounted inside said housing for pivoting out of said housing through said slot about an axis perpendicular to said rear face.

4,209,118

GUIDE ROLL APPARATUS

Carl H. Minton, c/o ADS Machinery, P.O. Box 1027, Warren, Ohio 44482

Filed Mar. 15, 1978, Ser. No. 886,732
Int. Cl.[2] B65H 25/10, 25/18, 25/26
U.S. Cl. 226—21 **9 Claims**



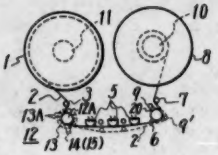
1. Roll guide apparatus insertable within a strip processing line for correcting deviation of a running strip from the longitudinal centerline of said processing line, comprising:
a base,
a roll carried by said base for rotation about its longitudinal axis and for shifting movement about an axis transverse to said longitudinal axis, said roll being adapted to have said strip trained over a portion of its peripheral surface,
link means for shifting said roll about said transverse axis, said link means having relatively moveable portions operable to change its effective length, said relatively movable portions comprising a pair of fluid cylinders connected in back-to-back relation, the rod of one cylinder being connected to said base and the rod of the other cylinder being connected to a lever which is effectively connected to said roll for shifting it about transverse axis,
means operable to effect change in the length of said link means, and
means for sensing deviation of said strip from the centerline of said strip processing line and operable to send a signal to said operable means and cause change in the length of said link means in correspondence with the deviation of said strip.

4,209,119

TAPE DRIVE CONTROL APPARATUS

Susumu Kakuta; Katsuyoshi Nukui, and Kenji Hiraishi, all of Mitaka, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,689
Claims priority, application Japan, Jun. 21, 1977, 52/73666
Int. Cl.[2] B65H 25/24, 23/16
U.S. Cl. 226—24 **9 Claims**



1. Tape drive apparatus comprising supply and take up reels selectively operable to transport a tape in a normal record and playback mode at a predetermined speed, a fast forward mode and fast rewind mode; a constant speed capstan about which the tape is normally adapted to contact a peripheral sector of at least 90°, and; tape contact control means movable between a first position apart from said capstan and tape to thereby permit the tape to contact said capstan to be frictionally driven during the record and playback mode and a second position interposed between the tape and said capstan to separate the tape from contact with said capstan during the forward mode at other than said predetermined speed; in the rewind mode, and; on cessesion of transport of the tape.

4,209,120

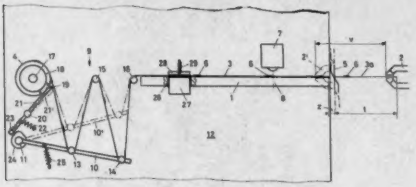
APPARATUS FOR INTERMITTENTLY ADVANCING A SHEET OF INDETERMINATE LENGTH

Franz Ruegg, Neuhausen am Rheinfall, Switzerland, and Otto Schwarz, Waldshut-Tiengen, Fed. Rep. of Germany, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Oct. 26, 1978, Ser. No. 954,980
Claims priority, application Switzerland, Oct. 27, 1977, 13082/77
Int. Cl.[2] B65H 23/18, 17/26
U.S. Cl. 226—32 **8 Claims**

1. In an apparatus for the division-true, intermittent feed of a sheet of indeterminate length having markings thereon spaced at a divisional distance; the apparatus including means supporting a sheet supply roll; a table for receiving the sheet from the supply roll; a tensioning device disposed between the supply roll and the table and engaging the sheet for tensioning the same; an advancing device for engaging and advancing the sheet in each operational cycle through a forward feed stroke that is greater than the divisional distance; reversing means for retracting the sheet in each operational cycle through a centering stroke subsequent to the forward feed stroke; the reversing means includes a force-exerting means for imparting to the

sheet a force for executing the centering stroke, a sensor head cooperating with the moving sheet for responding to the presence or absence of the sheet markings; a cutting device for cyclically severing a length from the sheet; a solenoid assembly having a solenoid and being connected with the sensor head for changing the state of energization of the solenoid as a



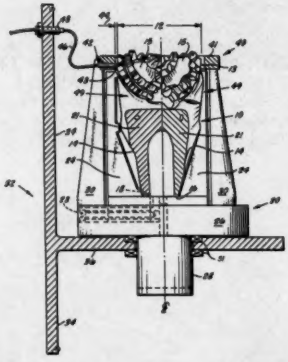
function of the response of the sensor head to the sheet markings, an armature cooperating with the solenoid and the sheet for selectively immobilizing or releasing the sheet as a function of the state of energization of the solenoid; the improvement wherein said force-exerting means is solely said tensioning device.

4,209,121

ELECTRONIC BIT GAGING

Alan L. Newcomb, Rancho Palos Verdes, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 23, 1978, Ser. No. 953,388
Int. Cl.[2] B23K *37/04*
U.S. Cl. 228—49 R **8 Claims**



1. An apparatus which provides precise alignment geometry of a two or more leg segment rock bit wherein the gage size and rock bit concentricity is monitored by non-contacting means during the rock bit welding process comprising:

a rotatable weld fixture having means for mounting said rock bit thereto, said fixture being adjustable to axially align said rock bit with said fixture,

a fixed datum structure mounted to said weld fixture, said datum structure being positioned to be spaced from the gage surface defined by said rock bit,

a plurality of electronic gage sensing means mounted to said datum structure, each adapted to face a gage surface of said rock bit and comprising an eddy-current probe, the discharge face defined by said probe being substantially parallel with the axis of said rotatable weld fixture, and

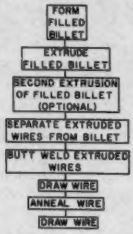
means to remotely monitor said plurality of electronic gage sensors during said welding process.

4,209,122

MANUFACTURE OF HIGH PERFORMANCE ALLOY IN ELONGATED FORM

James G. Hunt, Terrace Park, Ohio, assignor to Polymet Corporation, Cincinnati, Ohio

Filed Dec. 18, 1978, Ser. No. 970,658
Int. Cl.[2] B23P *17/00*
U.S. Cl. 228—173 E **6 Claims**



1. A method of manufacturing wire and other components having a high length to cross section ratio comprising the steps of

positioning a plurality of rods into a can in parallel relation with each other and parallel to the axis of the can, said rods being castings of a "high performance" alloy in an "as cast condition" and having a diameter between approximately one eighth inch and one half inch,

closing off one end of said can with a cap,

introducing powdered filler material into said can to fill the spaces between said rods and between the rods and the interior surface of said can, said filler material being generally spherical with a diameter of less than 0.005 inch, said filler material being further characterized by an extrusion constant within approximately 40% of the extrusion constant of said rods,

compacting said filler material to a relative density of at least 0.33,

attaching a cap to the other end of said can to thus complete a filled billet in which the rods are incorporated,

heating said filled billet to a temperature approximating the forging temperature of said rods for a period of time sufficient for all portions of the billet to reach such temperature,

placing said preheated, filled billet in an extrusion press and extruding said billet at a pressure between approximately 30 and 120 tons/inch^2 at a rate between about 50 and 250 inches per minute through a die affecting an area reduction in the cross section between 3 and 45 times,

allowing the extruded filled billet to air cool, and

removing the extruded "high performance" alloy rods from the can and filler material.

4,209,123

PREVENTION OF SENSITIZATION OF WELDED-HEAT AFFECTED ZONES IN STRUCTURES PRIMARILY MADE FROM AUSTENITIC STAINLESS STEEL

Matthew C. Jay, 8411 Neva Ave., San Diego, Calif. 92123

Continuation of Ser. No. 927,588, Jul. 24, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,272
Int. Cl.[2] B23K *9/00*
U.S. Cl. 228—175 **15 Claims**

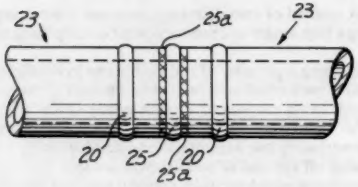
1. A method for joining by welding two workpieces, each of which comprises a sensitizable unstabilized wrought austenitic stainless steel parent part which wrought stainless steel material when heated to a sufficiently elevated temperature, such as by welding, to form a weld heat affected zone, precipitates carbides in the grain boundaries of said zone and thereby becomes sensitized in said zone, said method comprising:

a. welding to said wrought structured parent part append-

ages of cast dendritic structured unstabilized austenitic stainless steel material having a thickness of about ¼ inch or greater, which is substantially equal to or better in corrosion resistance, mechanical properties and metallurgical welding properties than the material of the parent part, and is compatible with solution heat treating of the material of the parent part for the purpose of dissolving carbides from the heat affected zone of the parent part, which cast material heated by welding is not sensitized, thereby to form a said workpiece, said welding operation causing sensitization in the heat affected zone of the parent part, the parent part and the appendages at their abutments having substantially equal wall thicknesses;

b. solution heat-treating the said workpieces to dissolve said carbides and thereby desensitize the parent part; and

c. utilizing a complementary workpiece, welding the said workpieces together by their appendages, the temperature, duration of time to make the weld, and the dimensions of the appendages being such that no portion of the parent parts reaches a temperature such as to cause it to be sensitized in this step.



9. A workpiece to be welded to a complementary workpiece to form an assembly without sensitization in the aswelded condition, said workpiece comprising a parent part made from sensitizable unstabilized wrought austenitic stainless steel of the type which when heated to a sufficiently elevated temperature, such as by welding, forms a heat affected zone wherein carbides are precipitated in the grain boundaries of said zone thereby to sensitize the heat affected zone, said workpiece further including an appendage welded to said parent part, said appendage being made of an unstabilized austenitic stainless steel alloy of cast dendritic structure which is substantially equal or better in corrosion resistance, mechanical properties, and metallurgical welding properties of the parent part, and is compatible with solution heat treating of the material of the parent part for the purpose of dissolving carbides from the heat affected zone of the said parent part, said workpiece having been solution heat treated to dissolve said carbides from the heat-affected zone in the parent part, the parent part and the appendage at their abutments having substantially equal wall thicknesses, said wall thicknesses being about ¼ inch or greater.

4,209,124

ROCK BIT ASSEMBLY METHOD

George W. Baur, Pasadena, and Ross McKee, Houston, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 773,100, Feb. 28, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 923,835

Int. Cl.[2] **B23K** *31/00, 37/04*

U.S. Cl. 228—182 **3 Claims**

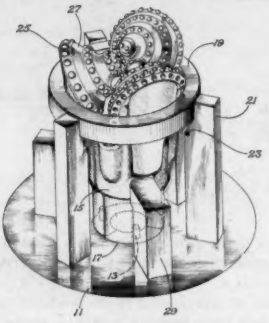
1. A method for assembling rock bit sections prior to welding to assure alignment of their shank ends and their cutter ends, said method comprising the steps of:

forming a substantially cylindrical and vertical dowel hole in the shank end of each section to be welded;

assembling rotatable cutters on the cutter ends of said section;

locating the substantially cylindrical and vertical dowel hole of the shank end of each section on a dowel in the base of a fixture to establish the relative positions of the shank ends and essentially prevent radial motion, said sections being positioned in a ring gage of predetermined diameter in a fixed position concentrically above the dowels;

positioning the cutters of each section against the ring gage which engages said cutters to minimize slippage of the sections;



clamping the sections with the sections and cutters thus positioned;

welding said sections while clamped; and

removing the welded sections from the ring gage and dowels.

4,209,125

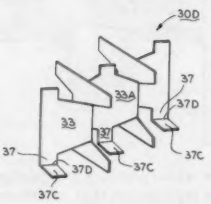
PARTITION STRUCTURE FOR SEPARATING GROUPED ARTICLES SUCH AS CONTAINERS

Charles R. Helms, Collegeville, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 15, 1979, Ser. No. 12,358

Int. Cl.[2] **B65D** *5/48, 71/00, 25/04*

U.S. Cl. 229—15 **10 Claims**



1. A partition separator formed from a cut and scored blank of paperboard or the like for separating rows of containers and adjacent containers in each row, said separator comprising:

(a) a plurality of foldably joined separator elements extending longitudinally between the rows of said containers;

(b) each of said separator elements being in a vertical plane angularly inclined to a vertical plane extending between the rows of said containers;

(c) transversely extending separator elements foldably and angularly joined to said first named separator elements;

(d) each of said transversely extending separator elements extending between adjacent containers of a row thereof and being in a plane angularly disposed relative to said vertical plane of said first named separator elements.

4,209,126

PATCH TOP CLOSURE MEMBER INCLUDING A MONOAXIALLY ORIENTED FILM LAYER

Thomas C. Elias, Ballwin, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Filed Jan. 12, 1979, Ser. No. 3,034
Int. Cl.[2] B65D 5/64, 39/00
U.S. Cl. 229—43 5 Claims

1. A composite container of the patch top closure type, comprising

(a) a vertically arranged tubular cylindrical body member including, in concentrically arranged layers,

(1) an impervious inner liner layer;

(2) at least one fibrous body wall layer; and

(3) an outer label layer;

(4) the upper end of said container body member being reversely curled outwardly, whereby said inner liner layer extends around the curled upper extremity of said body member; and

(b) a flexible patch top member closing the reversely curled upper end of said body member, said patch top member including a generally circular disk-shaped body portion extending across the reversely curled upper end of said body member, and a pull tab portion extending radially outwardly from said body portion, said patch top member being of laminated construction including, in bonded layers,

(1) an upper layer of metal foil;

(2) a central layer of monoaxially oriented synthetic plastic film the grain pattern of which extends in a direction parallel with the longitudinal axis of said pull tab portion; and

(3) a lower layer of adhesive material bonding said patch top member to said reversely curled body member upper end;

(4) said patch top member containing in at least one juncture between said tab and body portions a tear-initiating cut, said pull tab portion being operable to tear a removable section from said body portion along a line of tear initiating at said cut and extending parallel with said given direction, whereby a residual section of said body portion containing a dispensing opening remains bonded to said container end.

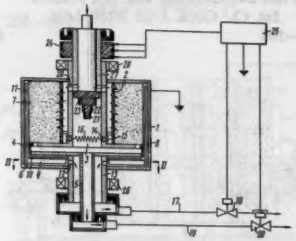
4,209,127

METHOD OF BREAKING DOWN EMULSIONS AND A DEVICE FOR CARRYING SAME INTO EFFECT

Vadim M. Khapaev, ulitsa Gogolya, 7 kv. 11, Sevastopol, U.S.S.R.

Filed Jan. 23, 1978, Ser. No. 871,465
Claims priority, application U.S.S.R., Mar. 23, 1977, 2465157
Int. Cl.[2] B04B 1/14, 11/08
U.S. Cl. 233—3 6 Claims

1. A device for breaking down emulsions, comprising: a centrifugal separator; a bowl of said separator; a perforated sleeve for the emulsion under process to admit to said bowl, said sleeve being arranged lengthwise the axis of rotation of said bowl; a chamber for the heavier emulsion component to collect, accommodated in said bowl and communicated with the peripheral zone of the interior thereof; an outlet sleeve of said chamber for the heavier emulsion component to collect; a chamber for the lighter emulsion component to collect, accommodated in said bowl and communicated with the bowl interior in the zone adjacent to said bowl peripheral zone wherefrom the heavier emulsion component is discharged; an outlet



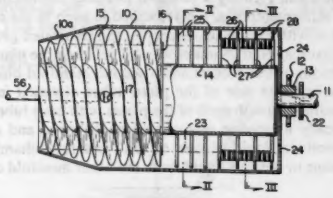
sleeve of said chamber for the lighter component to collect; a pelletized coalescent filling matter made from a polymeric material whose specific gravity is lower than that of the lighter emulsion component, said filling matter being placed in said bowl to occupy the space therein confined within the both walls and its said perforated sleeve.

4,209,128

METHODS AND APPARATUS FOR CLASSIFYING FINE PARTICLE SOLIDS

Sanford C. Lyons, Bennington, Vt., assignor to Yara Engineering Corporation, Springfield, N.J.

Filed Apr. 6, 1979, Ser. No. 27,844
Int. Cl.[2] B04B 1/00
U.S. Cl. 233—7 10 Claims

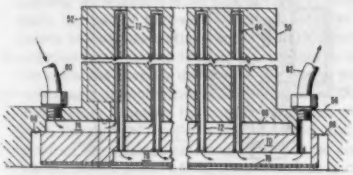


1. An improved process for classification and recovery of fine particle materials from a fluid suspension containing coarse, intermediate and fine particles comprising the steps of feeding a fluid slip into a rotary bowl centrifuge, maintaining the slip within said bowl in, essentially, three consecutive pools, said pools being physically and functionally demarcated by a multi-element shaft having three different types of conveyance elements which are being differentially rotated, with respect to said bowl, coaxially, within said bowl, in sequence, the first pool being served and shaped by a frusto-conical helical conveyor mounted on a shaft at one end of said bowl adjacent at least one coarse-particle-reject exit, a second pool with a cross-section substantially the same as that of the first pool, adjacent the first pool and a third pool substantially the same in cross section as the second, but extending to near effluent end of the bowl, and spaced from the first pool by the second pool to deposit the coarse particles, first on to the frusto-conical wall of the bowl, near the reject exit in the first pool followed by deposition of intermediate particles on the bowl wall of the second pool, subject to blending and propulsion whith the coarse particles by a discontinuous series of spade flights into the first pool, followed by a ribbon-type conveyor in the third pool to propel the finer sediment into the spade-type zone, and discharging the remaining slip from said bowl.

4,209,129
COOLING MANIFOLD FOR MULTIPLE SOLENOID OPERATED PUNCHING APPARATUS

Robert G. Haas, Hopewell Junction, and Charles V. Lent, Poughquag, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,578
Int. Cl.[2] G06K 1/02; B26F 1/04
U.S. Cl. 234—108 8 Claims



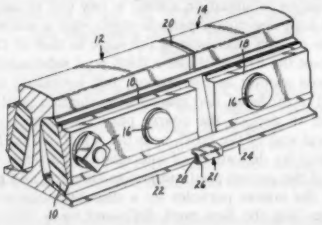
1. In a high-density solenoid operated multiple punch apparatus having a punch head provided with a plurality of closely spaced large bores arranged in columns and rows and extending partially through the punch head from the top side, solenoid elements mounted in the large bores, a plurality of holes with a diameter smaller than the diameter of the large bores aligned with the large bores and extending the remaining distance through the punch head to the bottom side, push rod elements of the solenoids disposed in the holes, the improvement comprising:

a cooling system for the punch head which includes a plurality of small bores arranged in rows in the bottom of the punch head terminating short of the top surface and positioned in the area between the said plurality of large bores, a plurality of elongated grooves in the bottom surface of the head located between rows of the said plurality of holes and forming a recessed chamber connecting a row of said small bores, a plate seated in each of the elongated rows with each plate separating the associated groove into a first manifold chamber located between the plate and the bottom of the groove and a second manifold chamber on the opposite side of the plate, tubes disposed in and extending through each of the plates with each tube concentrically located in one of said small bores, and means to introduce liquid in one of said manifold chambers and means to remove liquid from the other manifold chamber.

4,209,130
ADHESIVE TAPE FOR PROTECTING ELECTRICALLY INSULATED RAIL JOINT

Gerald J. Sundsrud, Blaine, and Bruce A. Marteness, Inver Grove Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1977, Ser. No. 851,510
Int. Cl.[2] E01B 11/54
U.S. Cl. 238—152 12 Claims

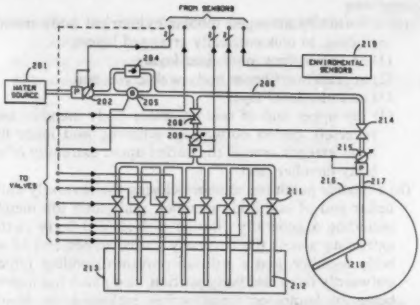


1. Method of protecting an electrically insulated rail joint from electrical shorting by laying against the undersides and around the toes of the rails across their juncture an adhesive tape comprising (a) a pigmented electrical-insulating plastic film backing which is resistant to deterioration under adverse environmental conditions, has an elongation of at least 300% and will stretch at least 300% under a force of 200 to 1800 grams per cm of width, and (b) an electrical-insulating adhesive layer which is tacky, self-sealing and has when tested as herein described an adhesion value of at least 500 grams per cm of width and an elongation of at least 500%, is more adhesive than cohesive and has a thickness within the approximate range of 0.25 to 1.25 mm.

4,209,131
COMPUTER-CONTROLLED IRRIGATION SYSTEM

Sorin Barash, Petach-Tikva; Yigal Brandman, Ramat-Hasharon; Yitzhak Cohen, Yahud; Shaul Shporn, Doar Petach-Tikva; Joseph Vishnipolsky, Netanya, and Elisha Yanai, Giv'at Shmuel, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1978, Ser. No. 905,303
Int. Cl.[2] B05B 12/04
U.S. Cl. 239—68 30 Claims



1. A system for irrigating an agricultural area comprising:

means for distributing water to the agricultural area from a water source;

main valve means for controlling the flow of water from the water source to said distributing means;

main metering means for measuring the quantity of water flowing from said main valve means to said distributing means and providing an output pulse each time that a predetermined quantity of water flows past the main metering means; and

automatic control means including means for opening the main valve means to allow the water to flow from the water source to said distributing means, means for totallizing the output pulses from said main metering means to provide a measured quantity of water distributed to the agricultural area, and means for closing the main valve means when the measured quantity of water is substantially the same as a pre-established quantity of water for the agricultural area.

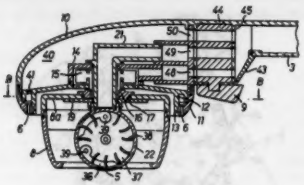
4,209,132
SHOWER SPRAY HEADS

Wong M. Kwan, North Point, Hong Kong, assignor to Well Men Industrial Company Limited, Quarry Bary, Hong Kong

Filed Mar. 20, 1978, Ser. No. 888,427
Claims priority, application United Kingdom, Mar. 18, 1977, 11595/77
Int. Cl.[2] B05B 1/08, 3/16
U.S. Cl. 239—381 7 Claims

1. A shower spray head for providing a fluid spray with mechanical vibration of a part of said head; said shower spray head comprising, in combination, means forming a path for fluid flow and for delivering a shower spray; a turbine member

mounted in said path and drivable in rotation about an axis by fluid flow through said path; an eccentric member mounted for rotation about said axis and which is drivable by said turbine member and is eccentrically mounted with respect to said axis; and a vibratory member connected by a pivotal connexion to



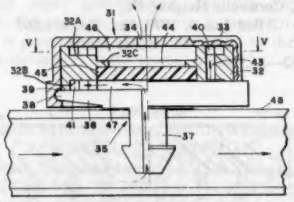
said eccentric member whereby rotation of said turbine member during use causes vibration of said vibratory member in one plane substantially at right angles to the turbine member axis of rotation and causes consequent vibration of said part of said head in said one plane.

4,209,133

DRIP LEVEL IRRIGATION EMITTER UNIT

Raphael Mehoudar, 36, Yehuda Hanassi St., Tel-Aviv, Israel

Filed Oct. 25, 1977, Ser. No. 845,277
Claims priority, application Israel, Oct. 26, 1976, 50766
Int. Cl.[2] F16D *1/00*
U.S. Cl. 239—542 **6 Claims**



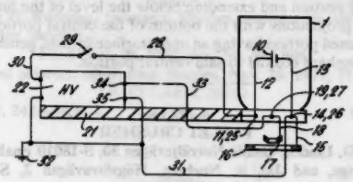
1. A drip level irrigation emitter unit comprising a casing member; a body member retainably fitted within the casing member; inner wall portions of said emitter unit defining inlet and outlet control chambers; said emitter unit having an outlet aperture connected to said outlet control chamber; one of said members having an internally disposed surface; an outer annular portion of said surface having an elongated flowpath formed therein, and a central cavity portion which includes said outlet control chamber and which is surrounded by said outer annular portion; said body member having an inner peripheral rim surrounding said cavity portion and spaced from said outlet aperture; a first end of said flowpath communicating with said inlet control chamber and a second end of said flowpath communicating with said outlet control chamber; said rim defining an area substantially greater than that of said outlet aperture; a resiliently flexible membrane adapted to be held against said inner peripheral rim and separating said inlet and outlet control chambers; flow coupling means for flow coupling said inlet control chamber to an irrigation conduit, the arrangement being such that upon the liquid pressure in said inlet chamber exceeding the liquid pressure in the outlet chamber by a predetermined amount, said membrane flexes elastically towards the outlet aperture so as to define, with a rim of the aperture, a restricted outflow path thereby limiting variations in the outflow rate.

4,209,134

CONTAINERS FOR USE IN THE ELECTROSTATIC SPRAYING OF LIQUIDS

Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 19, 1978, Ser. No. 953,774
Int. Cl.[2] B05B *5/02*
U.S. Cl. 239—690 **11 Claims**



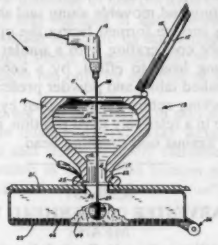
1. A container for a liquid to be electrostatically sprayed, suitable for mounting on a holder carrying a high voltage generator having first and second input and output terminals, the container having: a spray nozzle at least part of the surface of which is electrically conductive; an electrode disposed about the nozzle and insulated therefrom; mounting means for locating the container on the holder; and separate electrical connections from the nozzle and the electrode to separate contacts on the mounting means so placed that when the container is located on the holder by the mounting means each contact can make connection with one output terminal of the high voltage generator.

4,209,135

SEWAGE PULVERIZER

Charles V. Starks, 1521 Texas Ct., Tavares, Fla. 32778

Continuation of Ser. No. 827,491, Aug. 25, 1977, abandoned.
This application Jan. 9, 1979, Ser. No. 2,124
Int. Cl.[2] B02C *13/00*
U.S. Cl. 241—46.17 **1 Claim**



1. An attachment for a power hand drill for application to accumulations of solid waste in the holding tank of a recreational vehicle, comprising elongated rod means having upper and lower ends and capable of being detachably connected at its upper end to a drill for rotation about its lengthwise axis in a clockwise direction as seen from above; and impeller means coaxial with the rod means at the lower end of said rod means for disintegration of solid waste, said impeller having an upright central portion including a top and a bottom, said top coaxially receiving the lower end of the rod means, said impeller further having four identical imperforate projections integral with the central portion and extending radially outward therefrom at equally angularly spaced intervals, each projection extending from the top of the central portion forming a junction with the central portion and curving outwardly and extending downwardly and thence curving inwardly back to the bottom of the central portion to provide rounded tops and

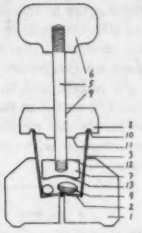
bottoms on the projections as viewed in side elevation, but each projection as viewed in end elevation having the shape of a vertically elongated letter S, the upper half of the S being smoothly convex in the aforesaid direction of rotation and the lower half of the S being smoothly concave in said direction, the junction of each projection with the top of the central portion being angularly offset in trailing relation to its junction with the bottom of the central portion, and a downwardly projecting portion coaxially integral with the bottom of the central portion and extending below the level of the junctions of the projections with the bottom of the central portion, said last-named portion having an undersurface formed generally as a hemisphere coaxial to said central portion.

4,209,136

TABLET CRUSHER

Folke D. Linden, Gamla Norräljevägen 50, S-18010 Enebyberg, Sverige, and Jan A. Norberg, Högsätravägan 2, S-18158 Lidingo, Sverige, both of Sweden

Filed Sep. 26, 1978, Ser. No. 946,012
Int. Cl.[2] B02C *19/08*
U.S. Cl. 241—169.2 **6 Claims**



1. A device for crushing medicinal tablets, comprising a base having a cavity formed therein for holding and enveloping at least the lower part of a beaker adapted to contain at least one tablet to be crushed, a shaft, a handle mounted at one end of the shaft and a crushing head mounted at the other end of the shaft, a cap surrounding and movable along said shaft, said cap having a ramming surface formed facing the crushing head, said ramming surface cooperating with a similar ramming surface on said crushing head to effect, by a knocking action, the removal of crushed tablet and powder present on the crushing head, said knocking action being effected by holding both the cap and handle in a relatively fixed position, and then allowing the cap to fall against said crushing head.

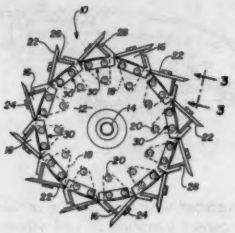
4,209,137

FORAGE HARVESTER CUTTERHEAD WITH BAFFLE MEANS

Ronald L. McAllister, New Holland; Edward H. Priepke, Stevens, and Robert A. Wagstaff, New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 29, 1979, Ser. No. 7,117
Int. Cl.[2] B02C *18/18*
U.S. Cl. 241—221 **7 Claims**

1. A rotatable cutterhead for a forage harvester of the multiblade type comprising a shaft, a plurality of axially-spaced support members respectively positioned in parallel planes transverse to said shaft and fixed at the center thereof to said shaft, a plurality of similar chopping blades circumferentially-spaced from each other around and extending between said support members and having cutting edges outermost thereon, and means connecting said blades to the peripheries of said support members, whereby the interior of said cutterhead is open and susceptible to the reception of cut forage products therein, said blades extending substantially tangentially from said support members and having inner surfaces facing the interior of said cutterhead, and open spaces extending substantially radially between the lower surfaces of each blade and the upper surface of the next succeeding blade in the direction of rotation of the cutter head; the improvement comprising the addition of baffle means extending substantially perpendicularly from said inner surfaces of said blades and toward the



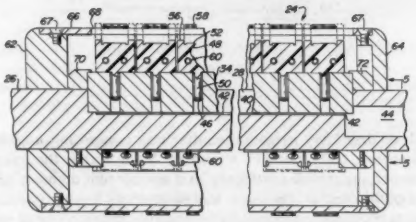
upper surface of the next preceding blade to substantially close said radial spaces between successive blades, thereby to redirect material from the cutting edge of the knives before it can enter the interior of the cutterhead and thereby maximize the efficiency of operation of said cutterhead.

4,209,138

TAPE WINDING APPARATUS

Aristide Cecchi, Riverside, N.J., assignor to RJM Manufacturing, Inc., Cornwells Heights, Pa.

Filed Jun. 1, 1978, Ser. No. 911,660
Int. Cl.[2] B65H *19/04*
U.S. Cl. 242—56.9 **12 Claims**

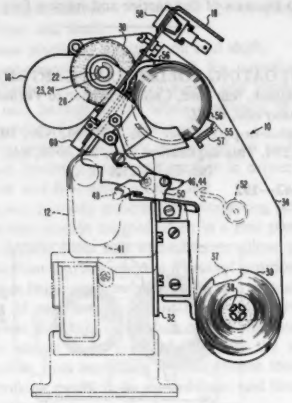


1. Tape winding apparatus including a shaft, at least one set of core engaging segments supported by said shaft and guided for movement in a radial direction between an inoperative retracted position and an extended core engaging position, said segments being uniformly spaced peripherally about said shaft, each segment having an arcuate outer peripheral end face for contact with a core, each arcuate end face of each segment being defined at the ends thereof by shoulders, the juxtaposed faces of said shoulders on each segment being arcuate so that the minimum distance between said shoulders on each segment is at the crest of the arcuate end face, first means biasing said segments to their retracted position, each segment having a piston which is narrower than the length of the segment in a direction parallel to the longitudinal axis of said shaft, passage means associated with said shaft for supplying pressurized air to said pistons for simultaneously biasing said pistons radially outwardly to overcome said first biasing means and move the segments from their retracted position to their extended core engaging position.

4,209,139
POWER DRIVEN PAPER TAKE-UP MECHANISM

Daniel D. Alper, Ypsilanti, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 1, 1979, Ser. No. 16,389
Int. Cl.[2] B65H *17/02*
U.S. Cl. 242—67.3 R 6 Claims



1. A paper take-up mechanism for simultaneously rewinding paper from at least one paper roll comprising:

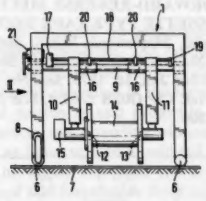
slip drive means for applying a forward driving force to the paper from each paper roll; and

rewind means, into which the paper accumulates, for timely positioning the paper from each paper roll so that upon sufficient paper accumulation, the slip drive means contacts the paper and applies the forward driving force which is proportional to the resistance of the paper to being accumulated in the rewind means.

4,209,140
APPARATUS FOR WINDING OR UNWINDING OF A CORD-SHAPED MATERIAL

Gerhard Seibert, Putzendoplergasse 3, 1232 Vienna, Austria

Filed Mar. 19, 1979, Ser. No. 21,376
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813910
Int. Cl.[2] B21C *47/24*; B65H *19/30*
U.S. Cl. 242—79 10 Claims



1. An apparatus for winding or unwinding of a cord-shaped material, e.g., of electrical cables, steel cables, or ropes, on and off a spool, comprising

a frame having sides and defining a horizontal axis which is above a space for receiving a spool.

two sleeve arms hanging from said horizontal axis and having on their lower ends, respectively, each a sleeve means for receiving a spool,

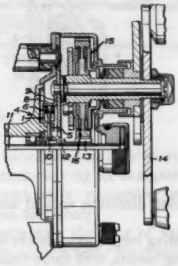
means for mounting at least one of said sleeve arms rotatable about said horizontal axis to a position higher than the space assumed by a spool which has been set on the floor, and

said frame is open at the side of the rotatable said at least one of said sleeve arms to an extent facilitating a relative movement of the spool and the apparatus.

4,209,141
CENTRIFUGAL BRAKE IN MULTIPLIER FISHING REELS

Jarding U. Karlsson, Svängsta, Sweden, assignor to ABU Aktiebolag, Sweden

Filed Nov. 20, 1978, Ser. No. 961,906
Claims priority, application Sweden, Nov. 28, 1977, 7713421
Int. Cl.[2] A01K *89/02*
U.S. Cl. 242—84.52 C 4 Claims



1. A centrifugal brake device on a multiplier reel comprising

a plurality of brake weight pins mounted in a radially outwardly directed direction, each said pin having a head at its radially outer end;

a brake weight in the form of a sleeve shiftably mounted on each said brake weight pin, each said sleeve having an open ended cavity at the radially outer end of the sleeve, and a bottom portion with an opening constructed in relation to said cavity at its radially inner end with at least said bottom portion being resiliently deformable sufficiently to allow said head of said pin to be forced into said sleeve through said opening in said bottom portion and said bottom portion return to its initial position whereby said brake weight sleeve may thereafter be removed from said brake weight pin only by exercise of a considerable force,

said bottom opening and said cavity in said sleeve being so dimensioned in relation to said brake weight pin and its said head that said sleeve is freely shiftable to a radially outer end position in which said bottom portion of said sleeve and said head of said pin form mutually cooperating abutments.

4,209,142
REMOTE TENSION-RELIEVING APPARATUS FOR SAFETY BELT RETRACTOR

Frederick C. Booth, Birmingham, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

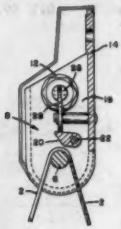
Filed May 2, 1975, Ser. No. 574,161
Int. Cl.[2] A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.6 4 Claims

1. In a vehicle safety belt system adapted to restrain an occupant in a vehicle, the safety belt system including a shoulder belt and a retractor having a rewind mechanism biased to rewind the shoulder belt on a reel of the retractor, an improved tension-relieving apparatus comprising:

a housing disposed in a position remote from said retractor and having an approximately U-shape including a back wall and two sidewalls, said sidewalls extending approximately perpendicularly from said back wall;

a shoulder belt support disposed within said housing and extending between said sidewalls, said shoulder belt moving more than 90° around said support as said shoulder belt is unwound from said retractor and rewound into said retractor;

a locking means disposed adjacent to said shoulder belt support, said locking means including a clamp pivotably disposed with said housing and extending between said sidewalls, said clamp having a locking position and an unlocking position, said clamp movable between its locking position and its unlocking position, said clamp in its locking position preventing movement of the shoulder



belt in a rewind direction around said shoulder belt support;

a force transmitting means mounted in said housing adjacent to said locking means, said force transmitting means connected to said locking means and an actuating means, said force transmitting means moving said clamp between its locking position and its unlocking position, said clamp in its locking position relieving tension on the shoulder belt produced by the rewind mechanism of the retractor; and

an actuating means located in the vehicle remote from said housing and having electrical means connected to said force transmitting means for actuating said force transmitting means.

4,209,143

COIL CARRIER WITH CARRIER ELEMENTS EXTENDING PARALLEL TO ITS AXIS

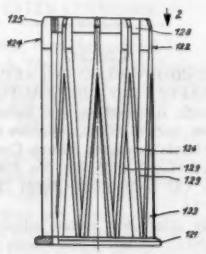
Gerhard H. Hahm, Aachen, and Walter Henning, Alsdorf-Begau, both of Fed. Rep. of Germany, assignors to Messrs. Jos. Zimmerman, Aachen, Fed. Rep. of Germany

Filed Mar. 6, 1979, Ser. No. 18,042

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810163

Int. Cl.² B65H *75/12, 75/20*

U.S. Cl. 242—118.11 **8 Claims**



1. A stackable coil carrier of generally cylindrical configuration comprising carrier elements which extend parallel to the axis of the carrier and have an outer extent defined by a cylindrical surface, an apertured end ring having a plurality of apertures, said carrier elements including first and second sections of which said first section has two limbs each having two ends with one end of each limb being secured to the apertured end ring adjacent one side of an aperture thereof, said two limbs of said first section at their ends remote from the apertured end ring converging with each other at an acute angle to define the juncture of the first and second sections and wherein said second section comprises rod members extending parallel to the axis of the carrier and having free outer ends.

4,209,144

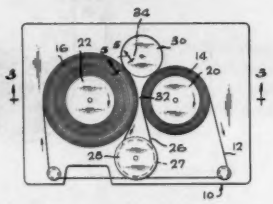
FLOATING ROLLER TAPE CARTRIDGE

Stepan Majicek, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 850,254, Nov. 10, 1977, Pat. No. 4,146,194. This application Nov. 20, 1978, Ser. No. 962,070

Int. Cl.² G11B *15/32*

U.S. Cl. 242—192 **5 Claims**



1. In a floating roller cartridge which includes a pair or tape rolls with a space between them, a driven roller on one side of the space between the rolls, and a floating roller on the other side of the space, the improvement comprising:

a drive belt extending in a closed loop around said rollers and through the space between tape rolls, and bearing against said tape rolls, said belt being under tension so the floating roller presses the belt against the tape rolls;

said floating roller has a substantially rigid periphery, and said belt is thin and inelastic enough against compression, as compared to the compressibility of the tape rolls, so that the floating roller presses the belt into the tape rolls to deform them and thereby cause compression of the tape rolls to produce an appreciable portion of the tape tension, whereby to enable use of a belt which is inelastic enough to enable rapid acceleration and yet produce tension in the tape.

4,209,145

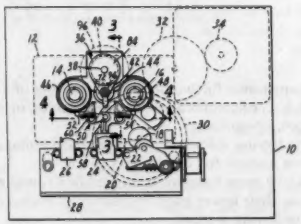
FAST FORWARD-REVERSE MECHANISM FOR CASSETTE TYPE TAPE RECORDER

Leif O. Erickson, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 10, 1979, Ser. No. 2,344

Int. Cl.² G03B *1/04;* G11B *15/32*

U.S. Cl. 242—204 **9 Claims**



1. In a magnetic tape recorder of the type having rotatable

supply and takeup turntables and spindles thereon adapted to receive supply and takeup reels of a reel-to-reel magnetic tape cassette, said recorder being conditionable for operation in fast forward and rewind modes, an improved fast-forward and reverse drive mechanism comprising:

a drive shaft adapted for energization in either a clockwise or counterclockwise direction,

first drive means secured to said shaft for coupling rotary motion from said shaft,

linkage means pivotably mounted on said shaft,

clutch means mounted on said shaft for coupling rotary motion thereof to said linkage means and allowing slippage of said linkage means when resistance to rotation thereof exceeds a predetermined value,

second drive means rotatably supported on said linkage means and having a peripheral surface in driven engagement with said first drive means, and

braking means movably mounted for contacting said turntables to arrest motion thereof when in a first position and for withdrawal from said turntables to allow unencumbered rotation thereof when in a second position,

said mechanism being positioned between said turntables such that pivoting of said linkage means in either direction as a result of a given direction of rotation of said shaft causes said second drive means to be coupled to either the supply or takeup turntable, thus imparting a rotary force thereto, and causes said braking means to be moved from said first position to said second position.

4,209,146

DEVICE FOR EXTENSIBLE FIN BLADE ON SHELL OR THE LIKE

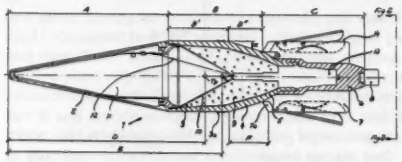
Kjell Mattson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 8, 1978, Ser. No. 876,089

Claims priority, application Sweden, Feb. 9, 1977, 7701405

Int. Cl.[2] F42B *13/32, 15/16*

U.S. Cl. 244—3.27 **9 Claims**



1. An extensible fin assembly for attachment with a tail section of a gas propelled projectile and the like in order to stabilize the flight of said projectile, and comprising:

at least one fin member extending in the longitudinal direction of said tail section of said projectile, with said fin member attached to and extending substantially perpendicularly from an outer surface of said tail section;

said fin member having an elongated slot extending into a middle portion of said fin member from an upper surface thereof, said fin member also having solid front and rear portions forming either end of said slot to protect said slot from forces generated by said gas propelled projectile during launching of said projectile;

a fin blade extending within said elongated slot in said fin member; and

pivot means engaging said fin blade for pivoting movement between a retracted position wherein said fin blade is completely positioned within said slot and an extended position wherein a portion of said fin blade extends beyond said fin members.

4,209,147

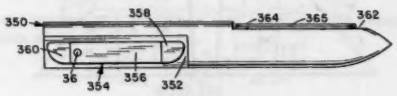
STEERING AND STABILIZATION APPARATUS FOR AERIAL MISSILE

Allen Jones, Jr., 5028 Lauderdale Ave., Virginia Beach, Va. 23455

Division of Ser. No. 822,227, Aug. 5, 1977, Pat. No. 4,135,687, which is a continuation-in-part of Ser. No. 661,626, Feb. 26, 1976, Pat. No. 4,040,373, which is a continuation-in-part of Ser. No. 579,896, May 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 566,353, Apr. 9, 1975, Pat. No. 3,995,575, which is a continuation-in-part of Ser. No. 279,714, Aug. 10, 1972, Pat. No. 3,881,438. This application Jan. 19, 1979, Ser. No. 4,719

Int. Cl.[2] F42B *13/32*

U.S. Cl. 244—3.28 **3 Claims**



1. An earlier missile, comprising:

an elongated body;

a pair of elongated vane members carried by said body, each of said vane members having an elongated planar mounting section operationally projecting substantially upwardly away from said body;

mounting means mounting the first of said vane member mounting sections on said body for rotation about an axis extending through said first vane member mounting section perpendicularly thereto adjacent an end thereof and mounting means mounting the second of said vane member mounting sections on said body for rotation about another axis extending through said second vane member mounting section perpendicularly thereto adjacent an end thereof;

wherein recesses are provided on opposite sides of said body, and wherein each of said vane member mounting sections is mounted within one of said recesses, said vane members being rotatable between an operating position thereof and a sheltered position thereof within said recesses wherein no portion of said vane members projects beyond the overall cross-sectional outline of said body of said missile;

said axes intersecting at a point on the longitudinal plane of symmetry of said body and outwardly and downwardly diverging from said point of intersection thereof, each of said vane member mounting sections being rotatable about said axis extending therethrough and thereby operationally movable into and out of alignment with the flowstream moving rearwardly alongside said body when said missile is moving forwardly through the air to concurrently serve steering and rolling functions, as well as to serve pitching functions.

4,209,148

FLYING WING

Pierre M. Lemoigne, 103, Avenue Verdier, 92120 Montrouge, France

Filed Jan. 3, 1978, Ser. No. 866,617

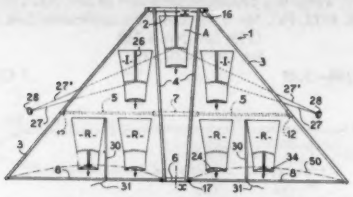
Claims priority, application France, Jan. 5, 1977, 77 00165

Int. Cl.[2] B64C *31/00*

U.S. Cl. 244—16 **3 Claims**

1. A flying wing for use in piloted free flight, of the kind comprising a rigid frame means of trapezium form having a longitudinal axis and on which is secured a canopy made of fabric provided with propelling, braking and steering nozzle means for canalising the flow of air rearwardly from the underside to the upper side of the canopy, and downwardly extending rigid support means for carrying the pilot, wherein said frame comprises a leading edge member, a substantially longi-

tudinal member and a lateral member extending rearwardly from each end of said leading edge member in a diverging fashion on each side of said longitudinal axis, the ends of said longitudinal members opposite to said leading edge member being connected by a first rear cross member and the rear ends of said lateral members being connected by second rear cross members respectively to the corresponding ends of said longitudinal members, said second rear cross members defining each with one longitudinal member and one lateral member substantially triangular portions on either side of an intermediate



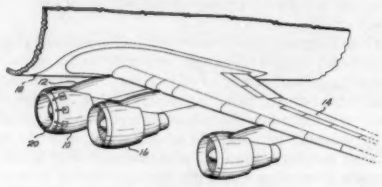
longitudinally extending strip defined therebetween by said longitudinal members and said leading edge and rear cross members, so that the whole frame means forms a rigid isosceles trapezium frame of which the small base is the leading edge and the large base the trailing edge of the wing, the fabric of the canopy being secured and taut on said frame with the exception of its trailing edge along said rear cross members, said nozzle means of the canopy comprising one front nozzle, a row of four rear nozzles adjacent the trailing edge and two intermediate nozzles located substantially between said front nozzle and said row of rear nozzles.

4,209,149

CONTRACTED INLET FOR JET ENGINE BEING TRANSPORTED AS CARGO

John P. Morris, Seattle, and Patrick A. Podenski, Everett, both of Wash., assignors to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Dec. 27, 1977, Ser. No. 864,566
Int. Cl.[2] B64D *27/18, 33/02;* **F02K** *11/00;* **F01D** *24/04*
U.S. Cl. 244—53 B **5 Claims**



1. An inlet extension adapted to be fixedly mounted to the operating air inlet of a jet aircraft engine to be carried in an inoperative condition externally on an aircraft, said operating air inlet having a fixed hilite area, comprising:

a removable annular inlet lip having a fixed hilite area less than the hilite area of the operating air inlet; and,

means for attaching the inlet lip to the nacelle to reduce the hilite area of the engine while being carried in an inoperative condition.

4,209,150

WING-MOUNTED AIRCRAFT UTILITY DOORSTOP

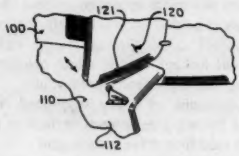
William J. Stephenson, 2165 44th Ave., Vero Beach, Fla. 32960

Filed Aug. 2, 1978, Ser. No. 930,245
Int. Cl.[2] B64C *1/00*
U.S. Cl. 244—129.1 **18 Claims**

1. A doorstop adapted to be attached to the wing of an aircraft in a position for communicating with and limiting the opening arc of a door of the aircraft, said doorstop comprising in combination:

a base for coupling to the wing of the aircraft;

an upstanding blade having a first end thereof coupled to said base and a second end thereof spaced from the wing by a distance sufficient to communicate with the aircraft door as it swings open, said blade having a thin dimension oriented generally perpendicular to a chord of the wing;



buffer means coupled to said second end of said upstanding blade so as to comminicate with and limit the opening arc of the aircraft door; and

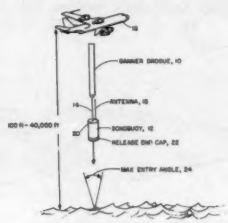
folding means, operably interposed between said buffer means and said upstanding blade, for allowing said buffer means to fold into a position generally parallel with the flow of air across the aircraft wing.

4,209,151

BANNER STABILIZER METHOD AND APPARATUS FOR AIR DROPPED ARTICLES

Roger I. Saunders, Hollis, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation of Ser. No. 630,372, Nov. 10, 1975, abandoned.
This application Nov. 17, 1976, Ser. No. 742,383
Int. Cl.[2] B64D *19/00*
U.S. Cl. 244—138 R **3 Claims**



1. Apparatus for deploying drogue apparatus located on top of a package to be air dropped comprising:

a cap having a top, sides and a lower edge adapted to surround the top portion of said package in a loose fit, said cap having an elongated flexible member depending from said lower edge in a direction parallel to a side of said cap and adapted to lie adjacent said package, said elongated flexible member upon being subjected to the airflow around said package when dropped from an aircraft, lifting said cap from said package, thereby to release said drogue apparatus for deployment.

3. Apparatus for releasing a strand connected to an air dropped object comprising:

a folded spring attached to the top of said object, with a free end thereof forming a downwardly sloping ramp having an end spaced from the attached portion of said spring;

an indented seat attached to the top of said object facing downwardly above said ramp, said seat having a notch running in the same directon as said ramp; and

detent means positioned between the indented portion of said seat and said ramp, said strand being attached to said

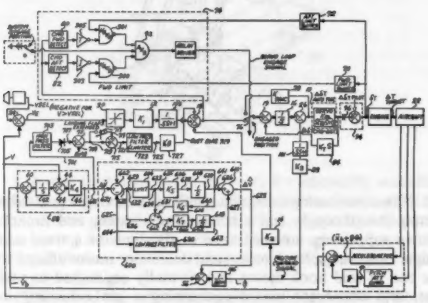
detent means and being accomodated in said notch, impact of said object causing deflection of said ramp end towards the attached portion of said spring, thereby releasing said detent means and said strand as said detent means moves down said ramp.

4,209,152

TURBULENCE COMPENSATED THROTTLE CONTROL SYSTEM FOR AIRCRAFT HAVING THROTTLE COMMAND SIGNAL PATH CONTROL MEANS RESPONSIVE TO ENGINE RATING CONTROL AND FLARE INITIATION

Leonard P. Stephan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1977, Ser. No. 854,568
Int. Cl.² G05D *1/08*
U.S. Cl. 244—182 **2 Claims**



1. In the command signal path of an aircraft throttle control system:

a first diode having an anode and a cathode and said first diode connected in series with said command signal path, said first diode having the cathode thereof adapted to receive positive polarity signals representative of throttle advance commands from the output of a summing amplifier in said command signal path upstream from said first diode, said summing amplifier including inputs responsive to gust bias and windshear compensated signals; and,

a second diode having an anode and a cathode, said cathode of said second diode adapted to receive signals representative of the difference between engine rating and actual engine EPR or N_1, and said anode of said second diode connected to said anode of said first diode.

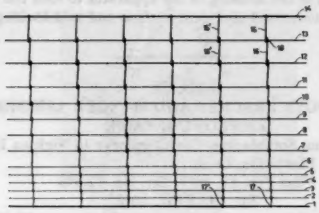
4,209,153

FUNCTIONAL MESH OR NETTING

Roger Vanvlaenderen, Zwevegem, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Continuation of Ser. No. 806,442, Jun. 14, 1977. This application Mar. 9, 1979, Ser. No. 19,234
Int. Cl.² B21F *27/00*
U.S. Cl. 245—8 **11 Claims**

1. A mesh or netting useful for fencing animals comprising a number of individual longitudinal wires of different strengths, other than selvedges, said individual wires in the vertical direction being mutually connected by weft wires and disposed at



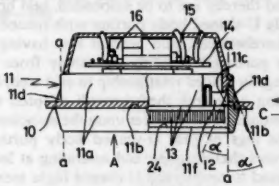
different spacings as a function of their position in the vertical direction of the mesh or netting.

4,209,154

DEVICE FOR SECURING AN APPARATUS IN A WALL

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 970,831
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757959
Int. Cl.² G12B *9/00*; A47B *67/02*
U.S. Cl. 248—27.3 **9 Claims**



1. A device for securing a substantially rigid housing containing an apparatus in a receiving wall having inner and outer sides, the housing having a pair of mounting surfaces facing away from each other in opposite directions, the mounting surfaces being spaced a certain distance apart from each other, the device comprising:

(a) a mounting frame of elastically deformable material, said frame including a frame wall element, said frame defining an internal area therewithin;

(b) said frame including an abutment shoulder for engagement with the outer side of the receiving wall;

(c) said frame including first and second locking tongues projecting from said frame wall element in opposite directions with respect to said frame wall element, said tongues being elastically movable toward each other and toward said frame wall element;

(d) said first locking tongue extending outwardly with respect to said internal area and being adapted for engagement with the inner side of the receiving wall, said second locking tongue extending inwardly with respect to said internal area and having a locking surface disposed generally parallel to the receiving wall and adapted for face-to-face, locking engagement with one mounting surface of the housing containing the apparatus;

(e) said frame including a partial wall element extending approximately parallel to the receiving wall when the device is installed, said partial wall element providing an abutment surface disposed in opposed, parallel relationship with the locking surface of the second locking tongue and facing toward the locking tongue, said abutment surface being adapted for engagement with the other

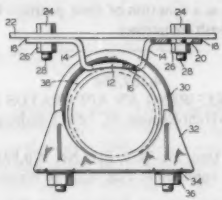
mounting surface of the housing of the apparatus, said abutment surface and said locking surface being spaced approximately the same distance apart as the mounting surfaces of the housing of the apparatus to lock the housing between said abutment surface and said locking surface.

4,209,155

HEAVY-DUTY BRACKET AND HANGER ASSEMBLY EMPLOYING SAME

Roy S. Florian, Southington, Conn., assignor to Nickson Industries, Inc., Plantsville, Conn.

Filed Feb. 15, 1979, Ser. No. 12,378
Int. Cl.[2] F16L *3/02*
U.S. Cl. 248—62 10 Claims



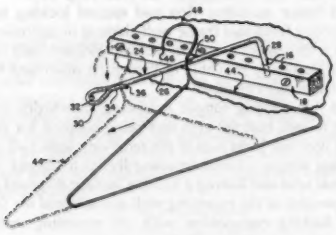
1. An integrally formed hanger bracket for suspending a U-clamp from a support structure from which the clamp and a load supported thereby are to be suspended, said bracket having a generally U-shaped body portion with spaced-apart legs and a web therebetween, said bracket also having generally planar flange portions extending oppositely from the upper ends of said legs in spaced relationship to said web, said flange portions having apertures therethrough adapted to receive fasteners for mounting the bracket upon the associated support structure, said legs of said U-shaped body portion having aligned apertures therethrough and extending at least to said web and adapted to receive the U-shaped bight member of an associated U-clamp, said apertures in said legs extending over at least the major portion of the length thereof whereby the U-shaped bight member of the associated U-shaped clamp may be readily inserted thereinto and will seat upon said web.

4,209,156

SWINGABLE HANGER SUPPORT MEMBER

R. Paul Kashden, Hewlett, N.Y., assignor to Closet Systems Corp., Hewlett, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,977
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—289 R 9 Claims



1. A longitudinal hanger support member adapted to have a conventional hanger releasably supported thereby adjacent one end thereof and mounted for pivotal movement about the other end thereof comprising

(a) a laterally extending longitudinal member provided at one end thereof with a downturned portion adapted to be received in an aperture for pivotal movement thereabout, said longitudinal member and downturned portion defining a vertical plane,

(b) said longitudinal member being provided adjacent the other end thereof with a formation which defines with one side edge of said longitudinal member a pair of opposed V-shaped apertures,

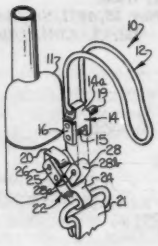
(c) said V-shaped apertures adapted to wedgingly engage spaced portions of the hook of said conventional hanger whereby to support said hanger in a plane substantially coplanar with said vertical plane and whereby said hanger is swingable about said downturned portion.

4,209,157

FIREARM HANGER

John H. Edmisten, P.O. Box 293, Boone, N.C. 28607

Filed Dec. 20, 1977, Ser. No. 862,617
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—360 5 Claims



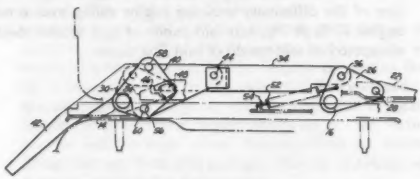
1. The combination comprising a firearm having a post with a bore therethrough; and a hanger for hanging said firearm from a supporting member such as the limb of a tree, said hanger comprising hook means and connector means affixed to one end of said hook means and pivotally connected to said post, said connector means comprising a pin extending in predetermined relation to said hook means and through said bore and closure means cooperating with said pin for detachably connecting said hanger to said firearm.

4,209,158

SEAT ADJUSTER

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Feb. 15, 1978, Ser. No. 877,880
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—421 41 Claims



1. A manually adjustable seat construction for a vehicle comprising a pair of elongated horizontal, parallel, longitudinally spaced, transversely extending rotatable torsion bars, lift lever means fixed to the ends of said bars, a rigid link pivotally connected at its end to the lift lever means at the same side of said construction, a seat support connected to said lift lever means for movement thereby between elevated and lowered position, a manual operating lever having a handle portion, said operating lever being pivoted to said seat construction for angular movement about a transverse axis in a plane perpendic-

ular to said axis and having an operative connection to one of said lift lever means, and latch means comprising latching elements movable into and out of latching engagement by movement of said handle portion laterally of the said plane of its said angular movement for fixing said operating lever in different positions of angular adjustment to retain the seat support in corresponding different positions of adjustment.

4,209,159
LOCKABLE GUIDE ASSEMBLY FOR ADJUSTABLE VEHICLE SEATS

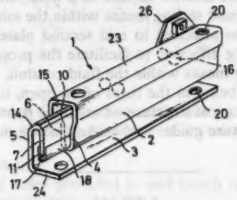
Burckhard Becker; Heinz Bauer, and Alfred Gedig, all of Solingen, Fed. Rep. of Germany, assignors to C. Rob. Hammerstein GmbH, Soligen-Merscheid, Fed. Rep. of Germany

Filed Jan. 10, 1978, Ser. No. 868,252

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 2702576; Apr. 7, 1977, 2715640

Int. Cl.² F16M *13/00*

U.S. Cl. 248—430 **4 Claims**



1. A seat supporting track assembly for adjustably mounting vehicle seats on vehicle floors comprising in combination:

(1) a first pair of parallel generally L-shaped guiding rails having a flat portion attached to the vehicle floor and a double-bent narrow U-shaped upstanding portion with a curved ridge;

(2) a second pair of parallel guided rails each having a broad double-bent generally U-shaped portion attached to the vehicle seat with a relatively broad flat, horizontal portion straddling the narrow curved ridge of each of the said guiding rails with depending portions at right angles to said horizontal portions;

(3) parallel tracks formed in pairs on said curved ridge of each guiding rail; and

(4) antifriction elements accommodated in the space between said tracks and said broad double-bent U-shaped portion of said guided rails.

4,209,160
ARTICULATED MOLD FOR OBJECTS HAVING UNDERCUT PARTS

Gerard Vanotti, Geovresset, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

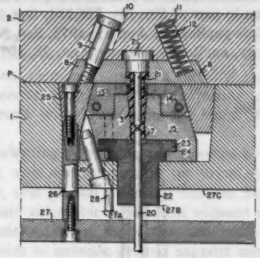
Filed Nov. 20, 1978, Ser. No. 962,282

Claims priority, application France, Nov. 29, 1977, 77 36220

Int. Cl.² B29C *1/14*

U.S. Cl. 249—162 **7 Claims**

1. Articulated mold for the manufacture of molded objects having opposed undercut parts, comprising two dies whose parting surface passes between the opposed undercut parts of the molded object, these two dies being movable perpendicularly with respect to each other, and several groups of shells composed of segments arranged within said dies and capable of moving about guide members under the action of pushers, characterized by a single drive piece outside said dies and movable in the same direction as the dies, driving said pushers along, the pushers being so arranged with the guide members that the movements of said shells succeed each other when the single drive piece actuates the opening of the mold by the steps of freeing the space located between the opposed undercut parts, and then freeing each of said undercut parts, and finally



ejecting the molded object, whereas the reverse movements occur upon closing of the mold.

4,209,161
COLLAPSIBLE CORE FOR CASTING MOLDS

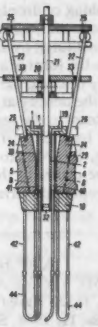
Johann Horvath, Trautmannsdorf, Austria, assignor to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne, Fischamend, Austria

Filed Oct. 27, 1978, Ser. No. 955,242

Claims priority, application Austria, Nov. 3, 1977, 7856/77

Int. Cl.² B29F *1/002*; B29D *23/02*; B29F *1/08*; B29C *1/06*

U.S. Cl. 249—180 **13 Claims**

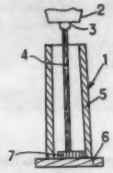


1. A collapsible core for use in casting molds, particularly injection molds, for the manufacture of moldings which are formed with undercuts on their inside surface, such as sleeves, which core comprises at least one inner core member, which remains out of contact with the inside peripheral surface of the molding, four and only four outer core members arranged as first and second pairs of mutually opposite members, which engage the molding and determine the shape thereof, and guides which converge toward the axis of the core and serve to guide said pairs of outer core members parallel to guide planes which are offset 90° from each other and extend through the axis of the core, said outer core members tightly adjoining each other, the outer core members of the first pair having lateral wedge faces which extend parallel to the guides and at right angles to the guide plane of the outer core members of the second pair, the outer core members of the second pair having inclined surfaces which are disposed on the side which faces the axis and are parallel to the wedge faces of the outer core members of the first pair, the outer core members of both pairs being adapted to be displaced from a molding position in that longitudinal direction of the guides in which the latter converge, and the displacement of the outer core members of the first pair being smaller than the displacement of the outer core members of the second pair.

4,209,162
ANTI-SPLASH DEVICE

Raymond H. Petiau, Nancy, France, assignor to Agence Nationale de Valorization de la Rescherche (ANVAR), France

Continuation-in-part of Ser. No. 736,131, Oct. 27, 1976, abandoned. This application Jan. 17, 1978, Ser. No. 870,125
Claims priority, application France, Oct. 28, 1975, 75 32926; Jan. 20, 1977, 77 01536
Int. Cl.[2] B22D *7/12*
U.S. Cl. 249—206 9 Claims

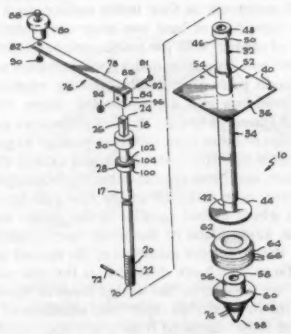


1. An anti-splash device for an ingot-mould, making it possible to limit the splashing of droplets of molten steel at the time of casting in an ingot-mould, placed in the bottom of the latter, this device being constituted by sheets of cardboard or similar material, arranged in the form of a rosette which can be opened out prior to its use by opening the latter in the manner of a fan, in order to increase the density at the centre of the rosette, the ends of the sheets closest to the centre of the open rosette being stuck to each other by means of an adhesive which remains flexible after setting, in order to form a central cylinder of small diameter, at the centre of the open rosette, which cylinder contributes to keeping the arrangement of the open rosette rigid.

4,209,163
DUMP VALVE ASSEMBLY

Robert A. Nordskog, 18135 Karen Pl., Tarzana, Calif. 91356

Filed Jan. 12, 1978, Ser. No. 868,813
Int. Cl.[2] F16K *35/00*
U.S. Cl. 251—96 5 Claims

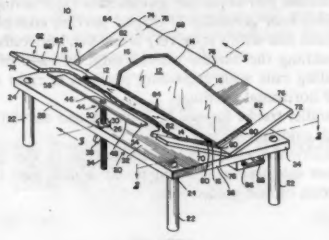


1. A valve assembly, comprising:
a fixed outer tube;
an inner tube telescopically located within said fixed outer tube, said inner tube having an inner end and an outer end, a first plate being secured to said inner end of said inner tube;
a shaft movably located within said inner tube, said shaft having an outer end and an inner threaded end, said shaft being of a length greater than said inner tube, said outer end of said shaft being attached to handle means, said handle means being effective to facilitate manual grasping and movement of said shaft within said inner tube, a second plate being attached to said inner end of said shaft, movement of said shaft with respect to said inner tube causes a variation in the spacing between said first and said second plates;
a resilient expandable sealing means located between said first and second plates, said first and second plates being spaced so as to precompress said sealing means in its rest position, said sealing means is in the form of an annular donut-shaped plug, the latter having an exterior peripheral surface configured into a plurality of interconnected ribs, said ribs being adapted to provide a positive fluid-tight seal with the interior surface of a fluid conduit upon expansion of said sealing means within the said conduit; and
guiding means attached to said second plate, said guiding means being effective to facilitate the proper location of said sealing means within the fluid conduit, and said guiding means being in the form of an open, cage-type, substantially conical structure wherein the pointed end of said latter structure guides said sealing means into the desired position.

4,209,164
TOOL FOR USE IN CONSTRUCTING PANELED ORNAMENTS

Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711

Filed Aug. 10, 1978, Ser. No. 932,471
Int. Cl.[2] B25B *1/20*
U.S. Cl. 269—37 15 Claims



1. A tool for use in constructing ornaments and the like having panels disposed at a selected angle with respect to one another, and means for attaching said panels together to maintain said angle, the tool comprising a base, means for providing a first work surface defining a first plane, means for selectively adjustably positioning the first work surface in a tilted orientation with respect to the base including a threaded shaft, means threadably receiving the threaded shaft, means for mounting the threadable receiving means on the base, means for locking the threaded shaft in a selected position with respect to the threadable receiving means, and for maintaining said tilted orientation, and means for providing a second work surface defining a second plane, the first plane intersecting the second plane at substantially said selected angle, means for selectively adjustably positioning the second work surface in a tilted orientation with respect to the base, and for maintaining said tilted orientation, the tilted orientations of the first and second work surfaces cooperating to create said selected angle between said first and second planes, support means including a bar fixed to the vertically upper end of its respective threaded

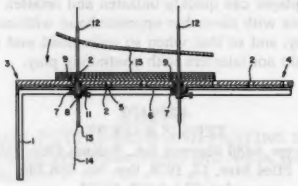
shaft, the bar including a generally flat horizontal portion and an upwardly inclined generally flat portion, the flat portions of the bar making approximately 140° angles with respect to each other.

4,209,165

WORKBENCH FOR SIMULTANEOUSLY CUTTING A PLURALITY OF PATTERNS FROM A PLURALITY OF LAYERS OF OVERLAPPING MATERIAL

Hidehiro Hachisuka, 1-2 Nishiimagawa-cho, Higashisumiyoshi-ku, Osaka, Japan

Filed Aug. 30, 1978, Ser. No. 938,000
Int. Cl.² B25B *11/00*
U.S. Cl. 269—54.5 **3 Claims**



1. A workbench for simultaneously cutting a plurality of patterns from a plurality of layers of overlapping material comprising:

an iron bench top;

a plurality of holes provided in said bench top at predetermined intervals; and

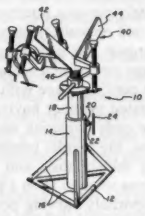
a plurality of needle holding members made from a magnetically adhering material detachably provided on a bottom surface of said bench top, said needle holding member comprising a ring magnet.

4,209,166

UNIVERSAL JACK AND WORK POSITIONING MECHANISM

Adrian J. DeRouen, 101 W. Saltilla St., New Iberia, La. 70560

Filed May 25, 1979, Ser. No. 42,500
Int. Cl.² B25B *5/14*
U.S. Cl. 269—71 **15 Claims**



1. A universal jack mechanism for supporting and accurately positioning conduit means such as tubular conduit and conduit fittings in preparation for conduit welding operations, said mechanism comprising:

a support structure having a base adapted to rest on a surface and an upright portion extending upwardly from said base; p1 a jack shaft being vertically movable relative to said support structure;

a drive element at the upper portion of said support structure for accomplishing vertical movement of said shaft relative to said support structure;

a cradle being connected to said shaft and positioned to receive and provide primary support for said conduit means to be positioned;

a bottom leveling arm extending from said cradle and having a bottom leveling adjustment element supported thereby, said bottom leveling adjustment element being adapted for leveling and supporting engagement with the bottom of said conduit means;

a universal leveling arm extending from said cradle;

a pair of opposed side adjustment arms extending transversely from said universal leveling arm and having side adjustment elements supported thereby, said side adjustment elements adapted to have adjusting and supporting engagement with lower opposed sides of said conduit means;

a pivotal orienting element being supported by said universal leveling arm and supporting an orientable adjustment element, said pivotal orienting element being pivotal to orient said orientable adjustment element relative to the fitting means being supported and positioned by said mechanism to provide desired support and facilitate adjustment of the position thereof; and

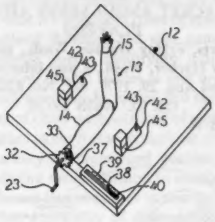
means securing said pivotal orienting element at the selected position thereof.

4,209,167

ARM WRESTLING APPARATUS

Patrick W. Jansen, Belmont Rte., Lavina, Mont. 59046

Filed Jun. 6, 1977, Ser. No. 804,000
Int. Cl.² A63B *23/00*
U.S. Cl. 272—67 **8 Claims**



1. An arm wresting apparatus including a base, an upstanding arm member pivotally connected to said base, a hand-engaging portion on the free end of said arm member, adjustable biasing means urging pivotal movement of said upstanding arm member in one direction, rotatable means associated with said biasing means to control the tension therein, tension-indicating means associated with said biasing means, locking means for selectively maintaining said arm member in an upstanding position, and stop means associated with said base adjacent said arm member to limit the extent of movement thereof; said biasing means including a spiral spring disposed within said arm member and said spring having a substantially straight portion extending longitudinally of said pivotable arm member.

4,209,168

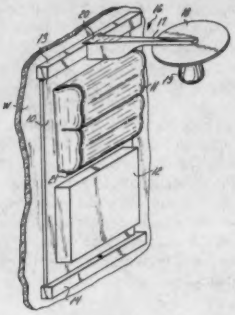
PORTABLE WALL-MOUNTED PHYSICAL CONDITIONING EQUIPMENT KIT

Booker T. Partlow, 2101 Madison Ave., Apt. 9D, New York, N.Y. 10037

Filed Oct. 24, 1978, Ser. No. 954,144
Int. Cl.² A63B *69/22*
U.S. Cl. 272—78 **4 Claims**

1. A portable wall-mounted physical conditioning equipment kit comprising means for supporting a foundation board vertically on a wall, a foundation board adapted to be removably supported on said wall by said supporting means with one face of the foundation board facing the wall and the other face of the foundation board facing away from the wall, respective firmer and softer cushion means fastened to respective first and

second zones on said other face, said firmer and softer cushion means simulating conventional respective heavy and light bags for boxing training, a speed bag, a backboard for the speed bag, the speed bag being suspended from the backboard, an arm



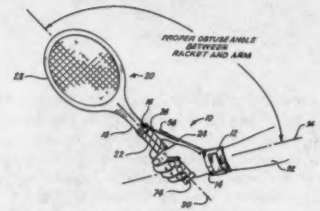
having said backboard mounted thereon at one end, and means for releasably attaching the other end of the arm to said supporting means and supporting the arm substantially horizontally extended from the wall.

4,209,169

WRIST-TO-RACKET ANGULATION AID FOR TENNIS PLAYERS

Kipton J. Roberts, Friday Harbor, Wash., assignor to Dennis Grove, Friday Harbor, Wash., a part interest

Filed Aug. 29, 1977, Ser. No. 828,916
Int. Cl.[2] A63B *69/38*
U.S. Cl. 273—29 A **3 Claims**



1. A wrist-to-racket training aid for assisting a tennis player in holding the racket at a proper angle with respect to the forearm, comprising:

a wristband made of pliable material and having means for removably fastening said wristband snugly about the wrist of a tennis player;

a racket-handle band having means for removably fastening such racket-handle band snugly about the handle of a tennis racket at a location adjacent the upper end of a grip on such handle;

first and second strap segments of pliable material for tethering said racket-handle band to said wristband, said first strap segment having one end so attached to said wristband so that its unattached end projects transversely outwardly from an edge of said wristband and so that when said wristband is fastened to the wrist of a player said first strap segment extends forwardly from said wristband adjacent the thumb and index finger of the player's hand, and said second strap segment having one end so attached to said racket-handle band so that its unattached end projects transversely outwardly from an edge of said racket-handle band and so that when said racket-handle band is fastened to a racket handle at said location said second strap segment extends rearwardly therefrom toward the butt end of such racket handle; and,

interconnectable and separable fabric fastening means provided on said first and second strap segments for releasably and adjustably fastening said first and second straps when the unattached ends thereof are pressed together in overlapping relation to form a tether of selected fixed length between said wristband and said racket-handle band, such that when said wristband and racket-handle band are fastened to a player's wrist and racket handle, respectively, said tether limits the maximum obtuse angle that the racket handle can make relative to the player's forearm; and,

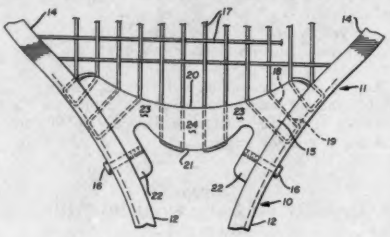
said first and second strap segments and fabric fastening means being of such size, construction and arrangement that a player can quickly unfasten and refasten said strap segments with his or her opposite hand without suspending play, and so that when so unfastened said strap segments do not interfere with continuing play.

4,209,170

TENNIS RACKET

John P. Garver, 9450 Sharrott Rd., Poland, Ohio 44514

Filed Mar. 13, 1978, Ser. No. 836,296
Int. Cl.[2] A63B *49/12*
U.S. Cl. 273—73 G **2 Claims**



1. A tennis racket comprising a frame having an ovaloid head portion terminating in a pair of closely spaced parallel extensions, said head portion being defined by pair of oppositely curving portions of said frame and a throat positioned between said oppositely curving portions and means securing said throat thereto, said oppositely curving portions and said throat providing support for adjoining stringing extending thereacross, said throat comprising a single elongated member having an outwardly curving shape with respect to said stringing, said single elongated member having short curved extensions on its opposite ends engaging said oppositely curving portions of said frame, the middle portion of said single elongated member being thicker than said end portions thereof adjacent said extensions so as to form a single flexible connection between said oppositely curving portions of said frame.

4,209,171

GAME UTILIZING A GAME IMPLEMENT

Michael N. Byron, 807 S. Curson Ave., Los Angeles, Calif. 90036

Filed Aug. 21, 1978, Ser. No. 935,277
Int. Cl.[2] A63F *9/18*
U.S. Cl. 273—161 **9 Claims**

1. A game implement comprising;

(a) a hollow, transparent elongated handle (1), having an

interior surface at least a part of which is transversely curved relative to the longitudinal extent thereof,

(b) a liquid (2) sealed within said handle, in an amount to form a gas bubble between the liquid and the interior surface of said handle,

(c) an elongated flexible rod (3) coaxially attached to said handle, and

(d) a body (4) attached to the end of the rod that is away from said handle,

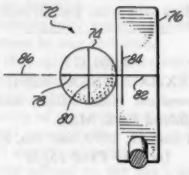
the flexibility of said rod related to the weight of said body such that imperceptible motion of said handle produces perceptible motion of said body.

4,209,172

GOLF BALL PUTTER CLUB AND PUTTING METHOD

Jiro Yamamoto, 2954 Palos Verdes Dr., North, Rolling Hills, Calif. 90274

Filed Jan. 9, 1978, Ser. No. 867,785
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—183 C 13 Claims



1. An improved combined putter and golf ball arrangement comprising, in combination:

a golf club putter means having a putter head member and said putter head member having:

a ball striking surface portion extending a distance substantially greater than the diameter of a golf ball;

a top surface portion extending rearwardly from said ball striking surface portion;

club alignment means on said top surface portion comprising a first club marking having a leg extending from said ball striking surface portion in a direction which appears from above to be perpendicular thereto, and a second club marking extending a distance equal to the diameter of a golf ball and perpendicular to and centered about said first club marking; and

a golf ball means having a ball alignment means thereon comprising at least one ball alignment marking, and said at least one ball alignment marking comprising a first equatorial ball alignment marking extending around said golf ball means;

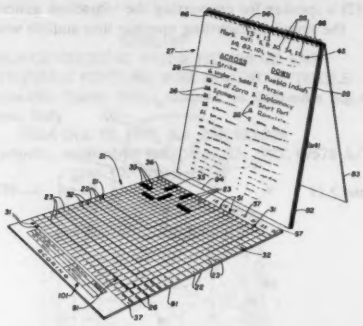
whereby said golf ball means may be positioned to provide said first equatorial ball alignment marking lying within a first plane perpendicular to the surface of a putting green beneath said golf ball means and including the direction in which said golf ball means is to be struck, and said golf club putter means may be aligned with said golf ball means to provide said leg of said club alignment means in said first plane and appearing from above as a continuation of said first equatorial ball alignment marking and said second club marking appearing parallel to and substantially equal in extent to the diametric extent of said golf ball, as viewed from above.

4,209,173

CROSSWORD PUZZLE GAME EQUIPMENT

Alexander Curtis, Beverly Hills; Mark L. Landsberg, Venice, and Edwin J. Meyers, Malibu, all of Calif., assignors to Omnion, Incorporated, Los Angeles, Calif.

Filed Jul. 20, 1978, Ser. No. 926,328
Int. Cl.[2] A63F 9/00
U.S. Cl. 273—240 7 Claims



6. Crossword puzzle game equipment including, game board means having an array of spaces defined thereon each formed for the entry of characters therein, said array of spaces being formed as side-by-side columns and rows of spaces without any puzzle pattern defined thereon, and said game board means having distinguishable space identifying indicia pre-printed proximate each and all of said spaces in said array; clue means associated with said game board means and including a plurality of different sets of clues with selected of said space identifying indicia correlated to each clue in each set of clues to enable solution of a plurality of crossword puzzles; a plurality of puzzle pattern defining means formed to enable designation of a plurality of different sets of spaces in said array as non-playing spaces to define a plurality of different crossword puzzle patterns, said plurality of puzzle pattern defining means further being formed for correlation of each puzzle pattern to a selected set of said sets of clues; and puzzle perimeter defining means formed to define a perimeter of the puzzle to be solved on said array of spaces, said perimeter defining means defining a plurality of differing puzzle perimeters; wherein the improvement in said game equipment is comprised of:

said puzzle perimeter defining means includes perimeter defining indicia on each of said clue means correlated to selected of perimeter defining indicia provided on said game board means.

4,209,174

SHOCK STARTING TYPE SIMPLIFIED PHONOGRAPH

Yutaka Shiseki, 768-1 Shimoaso, Tama-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed May 29, 1979, Ser. No. 43,318
Claims priority, application Japan, Feb. 28, 1979, 54-23104
Int. Cl.[2] G11B 3/08, 17/06, 25/04
U.S. Cl. 274—1 A 6 Claims

1. A shock starting simplified phonograph, comprising:

(a) a casing,

(b) a tone arm disposed in the casing,

(c) a pickup attached to the tone arm,

(d) a reproduction stylus connected to the pickup,

(e) means for pivotally mounting the tone arm disposed in casing, the pivot means enabling the tone arm to be swung such that the stylus can trace a rotatable record disc,

(f) a record disc having a starting point and a terminal point of sound reproduction,

(g) means for rotating the record disc,

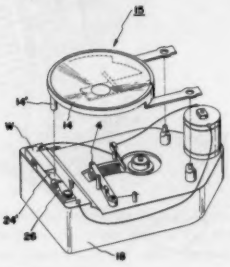
(h) means for normally urging the tone arm toward the starting point of sound reproduction of the record disc

(i) means for stopping the means for rotating when the tone arm reaches the terminal point of sound reproduction,

(j) a speaker unit comprising:

(1) a sound transmitting member swingably mounted in the casing, the sound transmitting member urging the pickup against the record disc,

(2) a speaker for converting the vibrations generated by the sound transmitting member into audible sound,



(3) means for biasing the transmitting member to urge the pickup against the record disc

(k) a weight, the weight being normally urged in a predetermined direction, the weight being movable in a direction opposite to the predetermined direction in response to a shock imparted the phonograph to enable a starting thereof, and

(l) a mechanical means for lifting the pickup and cooperating with the weight for returning the pickup to the starting point of sound reproduction against the bias of the sound transmitting member biasing means.

4,209,175

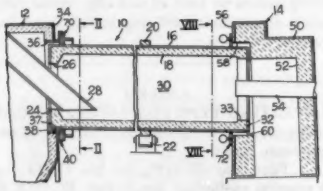
ARTICULATED SEAL FOR ROTATING CYLINDER SUCH AS KILN OR THE LIKE

Robert M. Bliemeister, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 9, 1979, Ser. No. 10,675

Int. Cl.[2] F16J *15/38*

U.S. Cl. 277—84 **2 Claims**



1. A seal for use in sealing an annular opening between a stationary member and a rotating cylinder which is telescopically arranged in said stationary member, said seal comprising an annular ring member circumscribing said cylinder adjacent said stationary member and closing said annular opening, wherein the improvement comprises having said annular ring member formed of a plurality of circumferentially extending ring segments, with circumferentially contiguous segments being pivotally connected to each other whereby contiguous segments may articulate with respect to each other to accommodate "out-of-round" places on the outer periphery of said rotating cylinder.

4,209,176

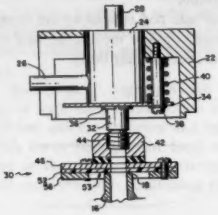
NOSE SEAL ASSEMBLY

Charles Soodak, Silver Spring, and Paul Priarone, Hyattsville, both of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 11, 1979, Ser. No. 2,722

Int. Cl.[2] F16J *15/34*; B04B *15/00*

U.S. Cl. 277—95 **13 Claims**



1. A nose seal assembly for establishing a seal between the interior of said assembly and the nose of an open ended hollow shaft upon relative rotational movement therebetween, said assembly comprising a hollow bushing, an annular wear pad which is made of a material having a high pressure x velocity (PV) factor and a low coefficient of friction and which is adapted to be positioned against the nose and holding means for releasably holding said wear pad to said bushing.

4,209,177

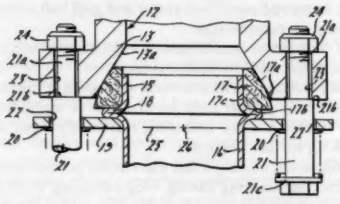
EXHAUST SEAL RING

John F. Hall, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 15, 1979, Ser. No. 3,683

Int. Cl.[2] F16J *15/12*

U.S. Cl. 277—101 **5 Claims**



1. An improved sealing annulus for use in an articulated ball type connection of a vehicle exhaust system between an exhaust manifold means for conducting exhaust gas from a vehicle engine and an exhaust header for conducting exhaust gas from the manifold to the atmosphere, one of the members having a seal seating surface defined thereby including an annular interior surface, the other member carrying the sealing annulus which has a sealing surface adapted to engage the annular interior surface of the one member as the members are urged toward one another parallel to the direction of exhaust gas flow, the improved annulus comprising: a member composed of a plurality of separate wires each having a relatively small diameter as compared to the dimensions of the annulus and compact molded into a ring-like configuration of sufficient density and structural rigidity to prohibit any substantial movement of the members toward each other subsequent to initial engagement so as to preserve spacing necessary for any significant angulation therebetween, the annulus having a sealing surface defined by closely packed wire portions extending along the exterior surface thereof whereby the annulus displays good thermal stability with high temperature compata-

bility and slight resiliency to conform to imperfect seat surfaces.

4,209,178

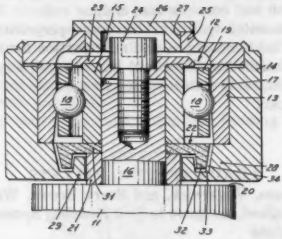
LUBRICANT SEAL

Ronald MacKenzie, Newport Beach, Calif., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Continuation of Ser. No. 540,070, Jan. 10, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 851,313

Int. Cl.[2] F16J *15/40*

U.S. Cl. 277—133 **3 Claims**



1. In combination,
a housing having end walls and a cylindrical side wall forming a cavity in the housing,
the cavity being substantially sealed against oil leakage except for an aperture in one end wall,
a shaft projecting through the aperture into the cavity,
oil lubricated bearing means mounted within the cavity rotatably journalling the shaft,
a preinjected quantity of oil entrapped within the housing,
and a lubricant seal comprising a rigid annular oil slinger formed of an oil absorbent material,
the oil slinger being affixed to the shaft within the cavity between the bearing means and the apertured end wall,
the oil slinger having on its side facing the bearing means a radially extending surface portion unimpededly exposed to the bearing means and also having its peripheral surface in close non-contact running relation to a portion of the cylindrical side wall adjacent the apertured end wall,
the apertured end wall and the oil slinger on its side facing the apertured end wall having radially and axially overlapping portions having a close running fit to each other forming a labyrinth inhibiting passage of oil to the outside of the housing,
the oil slinger being rotatable with the shaft and at low or non-rotatable speed being capable of absorbing oil from the cavity to prevent leakage through the labyrinth to the exterior of the housing and at high speed to centrifugally restore the absorbed oil to the cavity for deposition on the bearing means.

4,209,179

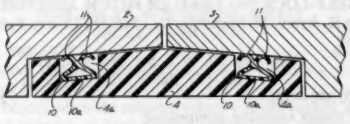
PIPE JOINT SEAL

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed May 17, 1979, Ser. No. 40,273

Int. Cl.[2] F16J *15/32, 15/40*

U.S. Cl. 277—205 **7 Claims**



1. A pressure responsive pipe joint seal for sealing connecting pipe sections comprising: an annular base member for fitting into a receiving channel in a joint member and at least one annular and resiliently flexible sealing flange on said base member curving upwardly, outwardly and then downwardly from said base member, said sealing flange and base member acting to tighten against the pipe joint surfaces they abut when fluid pressure is exerted against the seal and said sealing flange defining a curved upper surface over which a pipe joint surface can slide during coupling of adjacent pipe joint members.

4,209,180

SELF-CENTERING WORK HOLDING AND POSITIONING FIXTURE FOR MACHINE TOOLS

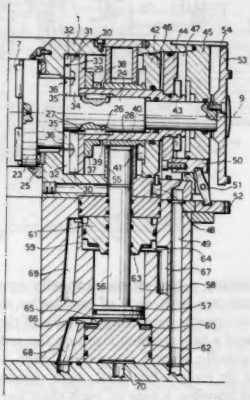
Mario Bertorello, Turin, Italy, assignor to Rotomors S.p.A., Orbassano, Italy

Filed Oct. 18, 1978, Ser. No. 952,879

Claims priority, application Italy, Nov. 15, 1977, 69575 A/77

Int. Cl.[2] B23B *31/30*

U.S. Cl. 279—4 **11 Claims**



1. A self-centering workpiece-positioning fixture for a machine tool, especially for a lathe, of the kind comprising a body attachable to a rotary spindle of a machine tool and haveing a pair of opposed jaws supported for rotation about a common axis which intersects the axis of rotation of the said body, a first servo control means for moving one of the said jaws along the said common axis, a second servo control means controlling a clutch for selectively connecting the other jaw to the body of the fixture, and a third servo control means for rotating the said other jaw about said common axis via a transmission means including a sprocket which is coaxial with and rotatable relative to said other jaw, wherein the said other jaw is mounted in the body of the fixture in such a manner that it is always at a constant distance from the axis of rotation of the said body and the said clutch includes an intermediate member mounted upon the said other jaw for rotation therewith, at least part of the said intermediate member being movable axially relative to the said other jaw to connect said other jaw to said body of the fixture in a first position and to connect said other jaw to said sprocket in a second position for effecting different rotational displacements of the other jaw about the common axis upon rotation of the sprocket.

4,209,181

INDEXABLE CHUCK

London T. Morawski, 15850 Common Rd., Roseville, Mich. 48066

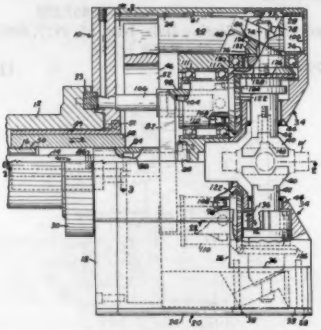
Filed Nov. 13, 1978, Ser. No. 960,586

Int. Cl.[2] B23B *31/18*

U.S. Cl. 279—5 **10 Claims**

1. A workpiece gripping chuck for use on a machine tool

having a power driven rotary spindle and telescopically engaged inner and outer drawbars which rotate with the spindle and which are independently axially reciprocable along the rotary axis of the spindle comprising, a housing adapted to be mounted on the spindle to rotate therewith, a pair of diametrically opposed, radially extending jaws mounted on said housing for radial reciprocation toward and away from each other to grip and release a workpiece and also for rotary indexing movement about their axis of reciprocation to rotatably index the gripped workpiece about an axis perpendicular to the rotary axis of the spindle, a pair of parallel puller shafts axially reciprocable in said housing along axes parallel to the rotary axis of the spindle, a puller plate in said housing fixedly connected at its central portion with one of said drawbars, said



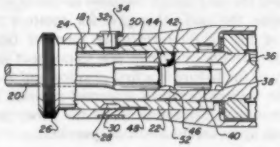
puller plate having a pair of diametrically opposed end portions connected one with each of said puller shafts, each jaw including a jaw spindle extending radially of the rotary axis of said housing and a jaw member fixed on the radially inner end of each jaw spindle, means journalling each jaw spindle for rotation about its longitudinal axis, each spindle being axially slidable in said housing, a cam on each shaft having a cam face inclined to the axis of the shaft and a cam follower on each jaw spindle engageable with said cam face, each cam face being substantially flat and said cam follower comprising a shoe having a flat face in coplanar engagement with said cam face, each jaw spindle being rotatable relative to the shoe thereon, and means responsive to reciprocation of the other drawbar to rotatably index the jaws.

4,209,182

BIT RETAINER FOR SCREWDRIVER

Gordon P. Sheldon, West Olive, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 5, 1978, Ser. No. 948,719
Int. Cl.² B23B *31/22*
U.S. Cl. 279—75 **7 Claims**



1. In a portable power tool in combination:

a housing including a nose portion having an axial bore opening to one end thereof;

a rotary spindle disposed in said bore and forming an annular space between the cylindrical wall of said nose portion forming said bore and said spindle, said spindle including a socket for receiving the shank of a bit or the like;

a bit retaining key disposed on said spindle and operable to be in a position projecting into said socket for retaining a bit therein, said bit retaining key being operable to be displaced from said socket into said annular space to release a bit from said spindle;

an elongated tubular sleeve removably disposed in said bore in close fitting relationship to said cylindrical wall and being operable to occupy at least a portion of said annular space so as to prevent said bit retaining key from being displaced from said socket;

a sleeve retaining key disposed on said nose portion and projecting into said bore for releasably retaining said sleeve in said bore, said sleeve retaining key being biased into engagement with said sleeve by spring means disposed on said nose portion; and,

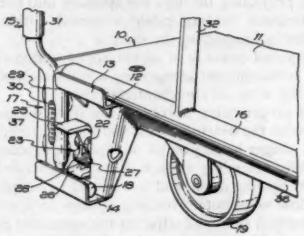
means associated with said sleeve and projecting from said bore at said one end of said nose portion for moving said sleeve axially to allow said bit retaining key to be displaced into said annular space to release a bit disposed in said socket.

4,209,183

LOAD CARRYING PALLETS

Brian G. Jones, Wightwick, and Barry Brown, West Hallam, both of England, assignors to Twil Handling Systems Limited, Kent, England

Filed Nov. 14, 1978, Ser. No. 960,653
Claims priority, application United Kingdom, Nov. 15, 1977, 47499/77
Int. Cl.² B62B *5/00*
U.S. Cl. 280—79.3 **16 Claims**



1. A load carrying pallet comprising a base having a deck for supporting a load and provided adjacent each end of each of two opposite sides with a support surface projecting level with the deck and terminating in an upstanding lug spaced from the side, and with an upwardly facing channel subjacent each support surface and lug, also provided between each support surface and its subjacent channel with a slot in the side of the base within which is located a catch on a pivotal axis parallel to the support surface, the catch having upper and lower outward projections and spring latching means for biasing the catch in either of two positions, whereby, in one position of the catch the lower projection extends from the slot and over the channel, in another position of the catch the lower projection is withdrawn into the slot, and in both positions the upper projection extends from the slot.

4,209,184

SELF-LOCKING TRAILER HITCH ASSEMBLY

Dwight R. Byers, 16 Buchanan Dr., MCAS, Cherry Point, N.C. 28532

Filed Aug. 30, 1978, Ser. No. 938,112
Int. Cl.² B60D *1/06*
U.S. Cl. 280—511 **2 Claims**

1. A trailer coupling comprising:

(a) a ball member attachable to a towing vehicle;

(b) a socket member comprising a generally elongated channel-like housing attachable to a towed vehicle and formed

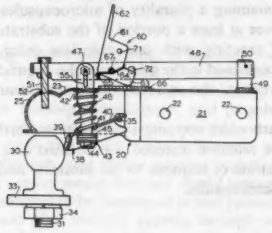
with a shaped socket at the forward end thereof having an aperture formed in an upper central portion thereof and being adapted to receive said ball member with the top thereof positioned below said aperture to establish a draft connection between the towing and towed vehicles;

(c) a ball retainer member pivotally supported within said housing rearward of said socket and pivotal towards said socket to retain said ball member therein and away from said socket to allow said ball member to be removed therefrom;

(d) a vertical push rod slidably mounted in said socket aperture and positionably downardly to have its lower end engage the top of said ball member when entering said socket and positionable upwardly by said ball member as said ball member seats in said socket;

(e) a vertical connecting rod extending above and through an aperture formed in said housing rearward of said socket and having its lower end cooperable with said ball retainer member to move said ball retainer member towards and away from said socket;

(f) linkage means mounted above said housing connecting



the upper ends of said push rod and said connecting rod and enabling said push rod when moving vertically upwardly in engagement with the top of said ball member as said ball member moves into said socket to transmit such push rod motion through said linkage means to said connecting rod to effect a comparable upward movement of said connecting rod to cause said ball retainer member to move towards said ball member and into locking relation therewith; and

(g) a bell crank shaped cam lever pivotally mounted on said linkage means and being latching engageable with the top surface of said housing to positively and automatically lock said linkage means and ball retainer means in locked positions when said ball member is fully seated in said socket and being disengageable to allow said ball member to be released from said socket, the connection between said linkage means and connecting rod being further adapted so as to enable said ball retainer member to move into locking position without causing repositioning of said linkage means or latching of said cam member whenever said ball retainer member is inadvertently struck from beneath by said ball member.

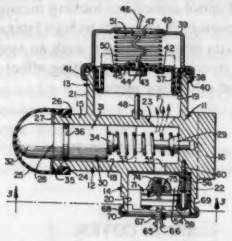
4,209,185

SENSING APPARATUS WITH ELECTRICAL ACTUATION SYSTEM

Donald R. St. Clair, Peru, and Gerald W. Ogden, Elgin, both of Ill., assignors to General Time Corporation, Thomaston, Conn.

Filed Jan. 11, 1978, Ser. No. 868,613
Int. Cl.[2] B60R *21/08*
U.S. Cl. 280—734 **6 Claims**

1. Impact sensing apparatus for use in activating inflation apparatus for deploying an air bag upon an impact of a vehicle with an object when the relative velocity of the vehicle and the impacted object is at least equal to a threshold velocity comprising housing means, means for mounting said housing means on the vehicle for conjoint movement therewith, said housing means defining a fluid cavity for confining a fluid medium, said cavity having a pair of chambers, an orifice between and in fluid communication with each chamber, sensing means within one of said chambers and displaceable from a first position in response to forces of impact of said vehicle and said impacted object for impelling said fluid medium from said one chamber, through said orifice into said other chamber which accumulates surges of said fluid medium whenever said sensing means shall be displaced from said first position, said orifice being shaped and sized for creating at least a predetermined pressure level within said one chamber at said threshold velocity, switch means for activating said inflation apparatus including a movable and stationary contact member, switch operator means responsive to said predetermined pressure level to move said movable contact member from a normally open to a closed contact position, said switch operator means including force transmitting means, an opening in said housing means into said cavity, and said force transmitting means in a first



position sealing said opening, an actuating member contacting both said force transmitting means and said movable contact member and movable conjointly with said force transmitting means from said first position for closing said switch means to complete a circuit to enable activation of said inflation apparatus, bias means urging both said actuating member and force transmitting means to said first position, said actuating member and force transmitting means movable from said first position in response to attainment of said predetermined pressure level, locking means including a locking arm and spring means connected to said locking arm for biasing said arm from a first position toward said movable contact member, and means supporting said locking means in said housing means adjacent said switch means so that said locking arm is biased into frictional engagement with said movable contact member when said switch means is open to substantially eliminate the possibility of movement of said movable contact member except under control of said switch operator means.

4,209,186

LOCK-UP INHIBITOR FOR DOOR MOUNTED RETRACTOR

Albert R. Close, Redondo Beach, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

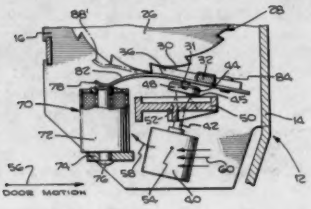
Filed Oct. 16, 1978, Ser. No. 951,715
Int. Cl.[2] A62B *35/02*
U.S. Cl. 280—803 **11 Claims**

1. In an inertially operated safety belt retractor having a spool associated locking means to prevent protraction of a safety belt that is responsive to lateral forces on a high inertia mass, a sensing means for sensing when the door is in an unlocked condition, and a lock-up inhibiting means responsive to said sensing means for resisting lock-up of said locking means whenever the door is in an unlocked condition, the improvement in said lock-up inhibiting means comprised of:

(a) first inhibiting means activated by said sensing means upon opening of said door to inhibit said spool associated locking means;

(b) interconnecting means operable between said first inhibiting means and said spool associated locking means; and

(c) said interconnecting means including a second inhibiting means for inhibiting lock-up of said locking means whenever said first inhibiting means is an inhibiting condition,



whereby said spool associated locking means will lock-up in a fail-safe manner in response to high lateral forces upon said high inertia mass associated with an emergency condition which overcomes the inhibiting effect of either said first or second inhibiting means.

4,209,187

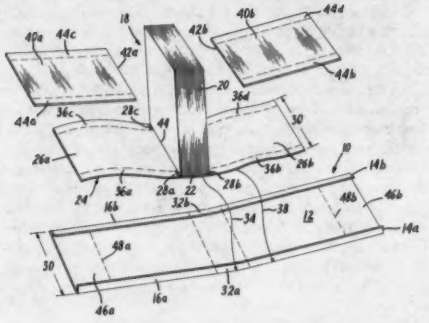
BOOK COVER

Richard E. Forrest, 98 Riverside Dr., New York, N.Y. 10024

Filed Apr. 10, 1978, Ser. No. 894,981

Int. Cl.[2] B42D *3/04*

U.S. Cl. 281—19 R **10 Claims**



1. In combination with a paperback book having a spine, two flexible flaps and a plurality of pages, a book cover comprising:

(a) a main panel;

(b) first and second longitudinal peripheral flaps folded toward each other along opposed edges of said main panel;

(c) four slits in said paperback book at the junction of the outer perimeter of the spine and flexible flap parallel to said junction;

(d) said first longitudinal peripheral flap being fitted into one pair of said slits and enclosing one edge of both of said flexible flaps;

(e) said second longitudinal peripheral flap being fitted into the other pair of said slits and enclosing the other edge of both of said flexible flaps; and

(f) means for closing the opposed ends of said main panel and first and second longitudinal peripheral flaps whereby said flexible flaps are captured therein.

4,209,188

MICROCAPSULES, METHOD OF MAKING SAME, AND CARBONLESS COPYING SYSTEM INCLUDING SAID MICROCAPSULES

Hung-Ya Chao, Williamsville, and George E. Maalouf, Niagara, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 11, 1978, Ser. No. 895,450

Int. Cl.[2] B41M *5/16, 5/22;* B01J *13/02*

U.S. Cl. 282—27.5 **45 Claims**

34. A microcapsule comprising a minute, discrete droplet of fill material, an individual rupturable, generally continuous wall encapsulating the droplet, the wall comprising at least one layer of material, discontinuities in the outermost layer being closed by the reaction product of a methylolated epoxide of an epichlorohydrin/bisphenol A-type compound and material of the outermost layer.

35. A microcapsule as set forth in claim **34** wherein the fill material includes initially colorless, chemically reactive, color forming dye precursor.

43. A carbonless copying system comprising a substrate, a coating containing a plurality of microcapsules according to claim **35** over at least a portion of the substrate and material capable of reacting with said colorless color forming dye precursor contained in the microcapsules to produce a colored reaction product, the material in reactive contact with the microcapsules.

44. A carbonless copying system as set forth in claim **43** wherein the reactive material is contained in a coating on a second substrate contiguous to the substrate containing a plurality of microcapsules.

4,209,189

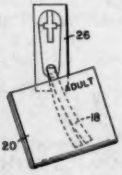
SELF-WICKETING TICKET

James E. Betterley, Huntingdon Valley, Pa., assignor to Globe Ticket Company, Horsham, Pa.

Filed Oct. 27, 1978, Ser. No. 955,419

Int. Cl.[2] G09F *3/10*

U.S. Cl. 283—18 **7 Claims**



1. A self-wicketing ticket comprising:

a tag, one surface of which is coated with a pressure sensitive adhesive,

a backing covering said pressure sensitive adhesive and adapted to be separable from said tag to expose said pressure sensitive adhesive,

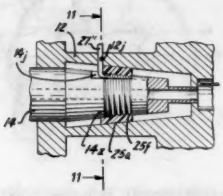
said tag having a wicket providing portion formed by a portion of said tag,

said wicket providing portion having a reinforcing tape adhered to the surface thereof opposite the pressure sensitive adhesive coated surface thereof.

4,209,190
COUPLING DEVICE

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 659,370, Feb. 19, 1976, Pat. No. 4,108,475, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Jun. 29, 1978, Ser. No. 920,403
Int. Cl.² F16L 21/00
U.S. Cl. 285—15 12 Claims



1. A coupling device comprising, in combination, a socket member and a plug member adapted to be removably disposed in said socket member, said plug member including inner walls defining a bore running therethrough, said plug member including an arcuate recess, said socket member comprising a body portion including inner walls defining a passageway running therethrough, said socket member including an arcuate recess, and washer means disposed in said passageway, said plug member adapted to be positioned in said passageway with a portion of said plug member passing through and bearing against said washer means to form a substantially fluid-tight seal between said plug member and said washer means, and said inner walls of said socket member and said washer means, and moving means for moving said washer means between said socket member and said plug member, said moving means being in the form of handle means comprising an elongated member adapted to extend through said arcuate recesses of said plug member and said socket member in contact with and bearing against said washer means, so that as said washer means wears, said moving means is adapted to bear against said washer means and rotate said washer means about said plug member to move said washer means into tighter engagement between said plug member and said socket member so that a substantially fluid-tight seal is maintained between said members.

4,209,191
QUICK MAKE-AND-BREAK LARGE DIAMETER COUPLING

John E. Lawson, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Jun. 16, 1978, Ser. No. 915,903
Int. Cl.² F16L 37/24
U.S. Cl. 285—84 2 Claims

1. In a quick make-and-break coupling for use in making up large diameter strings of pipe, tubular piling and the like, the combination of

a female connector member having a tubular body comprising

a first end portion adapted to be rigidly connected to a joint of pipe,

a second end portion opposite said first end portion and having a circular end face which is frusto-conical and tapers at a small angle outwardly and toward said first end portion,

the body of the female connector member having an inner surface portion which is of circular transverse cross section and extends from said second end portion over a major portion of the length of the female connector member, and

a plurality of lugs integral with the body of the female connector member, said lugs projecting radially inwardly from said inner surface portion, said lugs being spaced apart circumferentially and mutually aligned circumferentially,

each of said lugs having an active face which is directed toward said first end portion and lies in a frusto-conical surface which is concentric with the longitudinal axis of the female member and tapers at a small angle outwardly and toward said end face,

said sets of lugs being spaced by a significant distance from said end face;

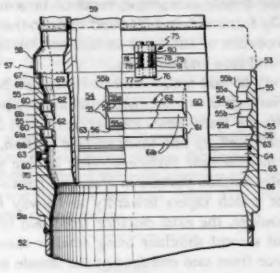
a male connector member having a tubular body comprising

a first end portion having an end adapted to be rigidly connected to a joint of pipe, said first end portion having a first frusto-conical shoulder which faces away from said end and tapers outwardly and away therefrom

at a small angle so as to be capable of essentially flush engagement with said end face of the female connector member,

a body portion of reduced diameter extending from said first end portion toward the opposite end of the male connector member and having a main outer surface portion which is of circular transverse cross section and is dimensioned to be embraced by said lugs of the female connector member, and

a plurality of lugs integral with said body portion of the male connector member and projecting radially out-



wardly from said cylindrical main outer surface portion, said lugs being mutually aligned circumferentially and spaced apart circumferentially by distances such that, upon insertion of the male connector member into the female connector member each of the lugs of the male connector member will pass between an adjacent pair of lugs of the female connector member,

each of said lugs of the male connector member having an active face which is directed toward said first shoulder and which lies in a frusto-conical surface tapering outwardly and toward said shoulder at essentially the same small angle as the active faces of the lugs on the female connector member,

said lugs of the male connector member being spaced from said first shoulder by a distance such that, when the male connector member has been inserted in the female member to seat said shoulder on said end face of the female connector member, said active faces of said lugs of the male connector member will be disposed to come into sliding face-to-face engagement with the respective active faces of said lugs of the female connector member when relative rotation of the connector members brings the lugs of the male connector member into axial alignment with the lugs of the female connector member; and

stop means comprising first means carried by the female connector member and coacting second means carried by the male connector member,

said stop means being constructed and arranged to stop relative rotation of the male and female connector members when the lugs of the male connector member are each axially aligned respectively with a lug of the female connector member,

the lugs of the female connector member being arranged in sets, the sets of lugs each comprising at least two lugs spaced apart axially of the female connector member, the corresponding lugs of the sets being mutually aligned circumferentially, the sets of lugs occupying a substantial portion of the length of said inner surface portion intermediate the ends thereof,

the lugs of the male connector member also being arranged in sets each having the same number of lugs as do the sets of lugs of the female connector member with the lugs of each set spaced apart axially of the male connector member, the corresponding lugs of the sets being mutually aligned circumferentially,

each of said lugs of the female connector member including

an inner face which is of circular transverse cross section and of significant length axially of the female connector member, said inner face being concentric with said inner surface portion, and

an inactive face which is opposite to the active face of the lug and lies in a generally frusto-conical surface which tapers inwardly and away from said end face,

said inactive faces of the lugs of the female connector member nearer said end face joining said inner surface portion of the female connector member in a location spaced axially from said end face and there is therefore a significant portion of said inner surface portion located between said end face and said lugs,

said body of said male connector member including a portion having an intermediate outer surface portion which is of circular transverse cross section and is dimensioned to be embraced by said inner surface portion,

said intermediate surface portion joining with said main outer surface portion in a second frusto-conical shoulder which tapers inwardly and away from said first shoulder, the axial distance from said first shoulder to said second shoulder being smaller than the axial distance from said end face of the female member to said inactive faces of the lugs of said female member nearer said end face whereby, when the male member is inserted in the female member to seat said first shoulder on said end face, said second shoulder does not engage said inactive faces of the lugs of the female member.

4,209,192

FLUID TRANSFER ADAPTER FOR CONNECTING A SINGLE CONDUIT TO A PLURALITY OF TANKER MANIFOLDS

Houston W. Knight, Whittier, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jun. 14, 1978, Ser. No. 915,422
Int. Cl.[2] F16L *55/00*
U.S. Cl. 285—178 **7 Claims**

1. A fluid transfer adapter for connecting a single articulated loading arm to a pair of tanker manifolds, said adapter comprising:

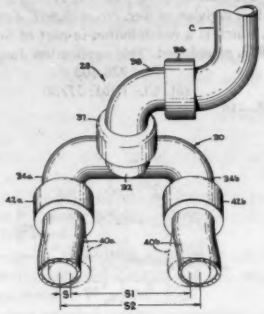
a generally T-shaped connector having a single annular inlet housing and a pair of smaller annular outlet housings with an approximate 90 degree bend in said connector between said inlet housing and each of said outlet housings to align said outlet housings along parallel axes;

a pair of eccentric couplers;

a pair of swivel joints;

means for connecting each of said swivel joints between one of said eccentric couplers and a corresponding one of said outlet housings of said connector; and

means for connecting said inlet housing to the outboard end of said articulated loading arm whereby said single loading arm simultaneously provides fluid to said pair of tanker manifolds.

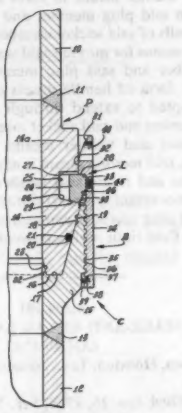


4,209,193

RIGID CONNECTOR FOR LARGE DIAMETER PIPE

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco, Inc., Ventura, Calif.

Filed May 17, 1977, Ser. No. 797,844
Int. Cl.[2] F16L *19/00, 21/08, 37/10*
U.S. Cl. 285—309 **14 Claims**



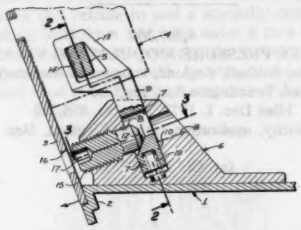
1. A rigid pipe connector comprising a box body having a transverse first shoulder axially spaced inwardly from an end of said body, a pin body extending within said box body and having a transverse second shoulder abutting said first shoulder, said pin body having an external circumferential groove located beyond said end of said box body defined between axially spaced third and fourth shoulders, a split lock ring in said groove expandable partially outwardly beyond the periphery of said pin body and contractable inwardly completely within said groove, said box body having an external threaded peripheral portion, an internally threaded locking and loading sleeve disposed about said pin body and box body and threadedly meshing with said threaded portion and extending axially outwardly beyond said groove, said sleeve having a fifth shoulder engaging said ring, upon threading of such sleeve along said box body, to force said ring against said third shoulder and said second shoulder against said first shoulder.

4,209,194

KEEPER FOR ROTARY LATCHES

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Filed Jun. 5, 1978, Ser. No. 912,431
Int. Cl.[2] E05C 13/00
U.S. Cl. 292—341.18 2 Claims



1. An adjustable latch assembly adapted for installation substantially flush with a panel comprising:

a. a housing having a socket adapted to be positioned essentially parallel to said panel, and a bore intersecting said socket and adapted to be positioned essentially perpendicular to said panel;

b. a keeper bar having an inner end received in said housing socket, and including a cam surface exposed to the housing bore, and an outer looped end engagable with a latch element;

c. an adjustment screw received in the housing bore, and engagable with the cam surface while the keeper bar is in engagement with the latch element to change the force applied to the latch element; and

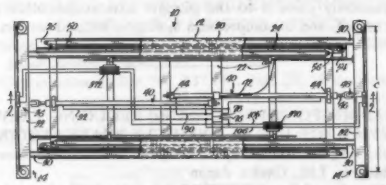
d. yieldable means is positioned to maintain the cam surface in contact with the adjustment screw.

4,209,195

EXPANDABLE SPREADER CONTROL CIRCUIT

William K. Holmes, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 2, 1978, Ser. No. 947,548
Int. Cl.[2] B66C 1/00
U.S. Cl. 294—81 SF 19 Claims



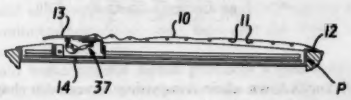
1. In an extensible spreader having a base section and an extensible section telescoped on said base section with hydraulic ram means for extending and retracting said extensible section; a hydraulic circuit including a reservoir, a pressurized hydraulic source, conduit means connecting said reservoir and source to said ram means and solenoid operated valve means in said conduit means; and an electric control circuit for controlling said valve means, said control circuit including a power source, extend and retract solenoids for said valve means, manually operated selector means for selectively energizing one of said solenoids, holding means for maintaining said one of said solenoids energized when said manually operated selector means is returned to a neutral position and for precluding simultaneous energization of both solenoids, and position control means for deenergizing said one of said solenoids when said extensible section reaches a predetermined position with respect to said base section.

4,209,196

SUN ROOF FOR CARS

Jean-Claude Mocelin, Geneva, Switzerland, assignor to Scalaire S.A., Panama

Filed Jun. 21, 1978, Ser. No. 917,581
Claims priority, application Switzerland, Jun. 22, 1977, 7817/77; Mar. 28, 1978, 3260/78
Int. Cl.[2] B60J 7/06
U.S. Cl. 296—219 15 Claims



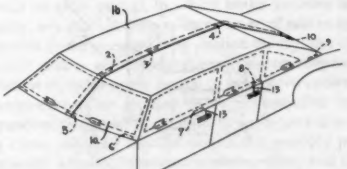
1. A flexible sun roof for cars, comprising, a frame movable forwardly and rearwardly in a rectangular roof opening in the car, a flexible cover connected at one end to the frame and at its other end to the rear edge of said opening, the cover being stretched in its closed position over said opening and folded rearwardly in the open position, a device for driving said frame forwardly or rearwardly for engaging it against the front edge of said opening, and for blocking it at least in said forward position, said device comprising a support on which said frame is mounted, the frame being displaceable, rearwardly to a limited extent with respect to the support against the action of spring means, for limiting upward movement of the frame relative to the support, said spring means, and a mechanism which lowers, when the support is initially displaced forwards against the action of said spring means, the frame and engages it against the front edge of the roof opening and, upon being displaced rearwardly detaches and raises the frame under action of the said spring means.

4,209,197

WEATHER PROTECTION SYSTEMS FOR ROAD VEHICLES

Moritz Fischer, Sonnhaldenstr. 19, CH-6052 Hergiswil, Switzerland (6052)

Filed Dec. 2, 1977, Ser. No. 856,868
Claims priority, application Switzerland, Dec. 4, 1976, 15250/76
Int. Cl.[2] B60J 7/00
U.S. Cl. 296—216 11 Claims

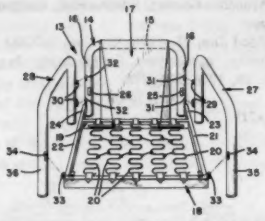


1. A weather protection system for a vehicle, wherein the vehicle has a front window pane, a rear window pane and at least two side window panes, each side window pane having a top edge, and a rain gutter extending at least along each top edge, comprising at least two protector parts, composed of flexible material and releasably connectable to one another within the region of said front window pane, and said rear window pane, and being securable to said rain gutter.

4,209,198
KNOCKDOWN CHAIR

Charles N. Apple, Sr., Greensboro, N.C., assignor to Metafab Industries, Inc., Greensboro, N.C.

Filed Sep. 15, 1978, Ser. No. 942,744
Int. Cl.[2] A47C 7/00
U.S. Cl. 297—443 8 Claims

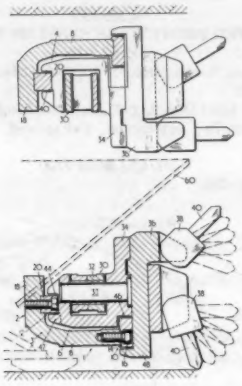


7. A knockdown chair comprising: inverted u-shaped side members, an inverted u-shaped back member, said side members having appendages which are slidably received by said back member, a seat frame, said seat frame including sinuous spring members, said seat frame being removably attached to said back member and said side members, a flexible back cushion support means, said support means being rotatably attached to said back member and removably attached to said seat frame whereby said support means aligns said seat frame for attachment of said seat frame with said back member.

4,209,199
MINERAL MINING MACHINES

Terence Oven; John T. Nicholls, and Robert H. Higgs, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 25, 1978, Ser. No. 954,428
Claims priority, application United Kingdom, Nov. 11, 1977, 47053/77
Int. Cl.[2] E21C 25/56
U.S. Cl. 299—43 13 Claims

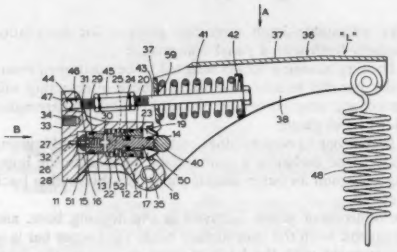


1. A mineral mining machine comprising a base having a leading portion adjacent the floor on which the machine is supported for advance over so as to form a conveying track for cut mineral extending lengthwise of the base, a rigid cutter member supported by the base for vertical movement as a whole relative to the base and including a guideway having upper and lower runs extending generally parallel to the conveying track, and endless cutter chain supported by the guideway and including slide members, a drive motor for the chain mounted on the cutter member, at least one drive member for the endless cutter chain, the guideway having relatively outer and relatively inner supporting guide surfaces, at least some of the slide members of the chain being provided with at least one engagement surface complementary to one of the guide surfaces of the guideway, and the relatively inner guide surface being positioned to the rear of the drive member in the direction of machine advance.

4,209,200
BRAKE PRESSURE MODULATING VALVE

Eric C. Hales, Solihull, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Dec. 1, 1977, Ser. No. 856,250
Claims priority, application United Kingdom, Dec. 2, 1976, 50226/76
Int. Cl.[2] B60T 8/18
U.S. Cl. 303—22 R 7 Claims



1. A vehicle fluid pressure brake control valve comprising:
a valve body having a plunger therein;
an operating lever pivoted relative to the valve body and extending substantially parallel with the axis of the plunger;
and a control spring acting in compression so as to bias the lever against the plunger and which is coextensive with at least part of the operating lever;
wherein the lever is pressed from a sheet of metal and is of a hollow construction and comprises an L-shaped body having a longer and shorter arm and is pivoted near the extremity of its shorter arm to the valve body at one side of the plunger axis such that its longer arm extends substantially parallel to the plunger axis at the other side thereof, and a compression spring is located within the hollow envelope of the lever.

4,209,201
LOAD-RESPONSIVE PRESSURE REDUCING VALVE DEVICE FOR USE IN A VEHICLE BRAKE SYSTEM

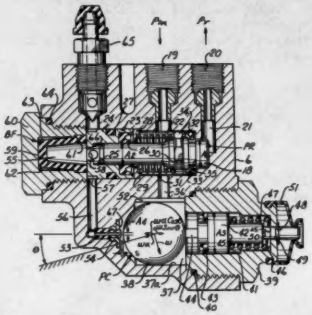
Hiroaki Nagara, Kobe, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 776,655, Mar. 11, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,803
Claims priority, application Japan, Jun. 29, 1976, 51-77545
Int. Cl.[2] B60T 8/14, 8/22
U.S. Cl. 303—22 R 1 Claim

1. In a brake system on a vehicle provided with a deceleration-responsive reducing valve having a brake fluid inlet connected to a brake fluid motor, a brake fluid outlet connected to a wheel brake cylinder for the rear wheels of said vehicle, and a chamber providing communication between said inlet and said outlet; said deceleration-responsive reducing valve including therein:
a plunger disposed in said chamber and having a first end face exposed to fluid pressure at said brake fluid inlet and a second end face exposed to fluid pressure at said brake fluid outlet of the reducing valve for restricting fluid

pressure applied to said wheel cylinder when a predetermined operation-starting fluid pressure at said outlet acting on said second end face of said plunger is attained;

means to determine said operation-starting fluid pressure of said plunger in relation to the weight of the vehicle and any load carried thereby and including an inertia ball resting on an inclined surface for rolling up said inclined surface for a required roll travel distance upon deceleration of the vehicle to seal a normally open passage of braking fluid from said inlet under a then existing fluid pressure to a cavity, said plunger including a third end face exposed to said fluid pressure in said cavity, which sealed fluid in said cavity cooperates with said third end



face of said plunger to determine said operation starting fluid pressure thereof; and

means to increase the pressure of fluid to be sealed in said cavity by said inertia ball when the vehicle is in a loaded condition and including a piston provided on the downward side of said inclined surface and against which said inertia ball normally resets when deceleration is not acting on the system, said piston displaceable against a biased spring by brake fluid under pressure from the brake fluid motor to displace the piston in a direction to increase said required roll travel distance of said inertia ball to seal said passage when a predetermined fluid pressure from the brake fluid motor is exceeded when the vehicle is in a loaded condition.

4,209,202

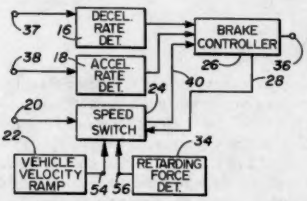
AUTOMATICALLY ADJUSTABLE SWITCHING CIRCUIT FOR A SKID CONTROL SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 837,497, Jun. 30, 1969, abandoned. This application Feb. 25, 1972, Ser. No. 229,334

Int. Cl.[2] B60T *8/12*

U.S. Cl. 303—106 **10 Claims**



1. In a skid control vehicle braking system including wheel speed signal generating means for generating a signal having a magnitude varying in accordance with the vehicle wheel speed comprising:

(a) a deceleration rate detector connected at an input to said wheel speed signal generating means for generating a deceleration rate signal;

(b) a speed switch connected at an input to said wheel speed signal generating means for producing a speed dependent control signal for inhibiting normal vehicle braking action;

(c) brake control means connected at a first input to said deceleration rate detector and at a second input to said speed switch, said brake control means having a first output level when both inputs are at the same signal level, and a second output level when either of said inputs is at a different signal level;

(d) an acceleration rate detector connected at an input to said wheel speed signal generating means for producing an acceleration rate signal, and connected at an output to said brake control means, wherein

(e) said acceleration rate detector and said speed switch in combination produce one input to the brake control means; and wherein

(f) said brake control means produces a first output level when the inputs connected thereto are at the same signal level, and produces a second output level when either of said inputs is at a different signal level.

4,209,203

ANTI-SKID BRAKE CONTROL SYSTEM

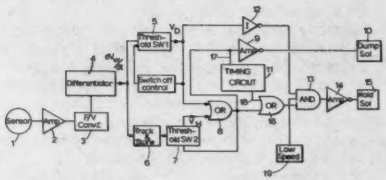
Malcolm Brearley, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Aug. 9, 1978, Ser. No. 932,307

Claims priority, application United Kingdom, Aug. 10, 1977, 33457/77

Int. Cl.[2] B60T *8/02*

U.S. Cl. 303—110 **7 Claims**

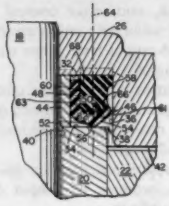


1. An anti-skid brake control system comprising brake pressure control means for producing a release signal to trigger the release of brake pressure and a subsequent re-apply signal to trigger the re-application of brake pressure in successive brake pressure release/re-apply cycles; and change-over control means for producing during a brake re-apply period a change-over signal to trigger a change from a first, rapid re-apply stage of said re-apply period, in which brake pressure is re-applied rapidly, to a second, slow re-apply stage of said re-apply period in which brake pressure is re-applied slowly; the change-over control means comprising storing means responsive to the duration of the re-apply period in successive cycles so that the change-over point in each cycle is controlled in a manner dependent on the duration of the re-apply period in the preceding cycle, whereby the duration of the re-apply period is dynamically adjusted to assume a preset value; said change-over control means comprising a first signal generator that is triggered at the beginning of the re-apply period and produces a first signal that varies progressively in a predetermined manner, a second signal generator including said storing means that produces a second signal that varies progressively in a predetermined manner in one sense during each release period and in the opposite sense during each re-apply period, and comparator means that compares said first and second signals and produces a change-over signal to trigger said change-over when the two signals are coincident.

4,209,204
TWO-PIECE SEAL FOR TRACK CHAIN JOINTS

Joseph F. Wagner, and Richard E. Murray, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 8, 1978, Ser. No. 931,942
Int. Cl.[2] F16J 15/38
U.S. Cl. 305—11 7 Claims



1. In a joint construction pivotally joining trailing and leading ends of track links of a tractor track chain including a pin having the trailing ends of a first pair of links respectively press fit on opposite ends thereof, a bushing rotatably received on the pin between the first pair of links and having the leading ends of a second pair of links press fit on opposite ends thereof, the trailing ends of the first pair of links respectively cooperating with the opposite ends of the bushing to define a pair of annular seal cavities and a pair of identical annular seal structures being respectively located in the annular seal cavities for excluding foreign matter from the interface of the pin and bushing, the improvement residing in the seal structures which each comprise:

an annular sealing member made of a relatively rigid abrasion resistant material formed to be generally right angular in cross section;

said sealing member as viewed in cross section, having first and second legs respectively disposed in general parallelism with the pin and a flat end surface of the bushing extending at a right angle to the pin; said second leg having an axially facing annular tapered contact surface forming the sole engagement of the sealing member with the flat end surface of the bushing and having a second surface facing axially opposite from the contact surface; an annular compressive load member being predominately rectangular in crosssection and being made of a resilient material which is softer than the material of the sealing member;

said load member having a first axially facing surface mated along its entire length with the second surface of the sealing member;

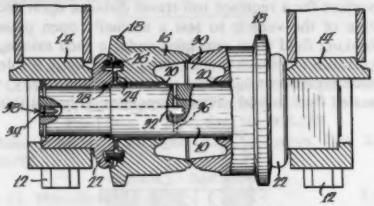
and the first axially facing surface together with the remainder of the load member being located approximately half radially inwardly toward the pin from the contact surface and half radially outwardly from the pin from the contact surface and compressed axially between the first pair of links and the legs of the sealing member so as to exert a force having a resultant acting long a line of action passing approximately through the contact surface and in general parallelism to the pin.

4,209,205
INSPECTION OF TRACK ASSEMBLIES

Anton T. Gregg, and Robert E. Murphy, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1977, Ser. No. 862,465
Int. Cl.[2] B62D 55/00
U.S. Cl. 305—14 5 Claims

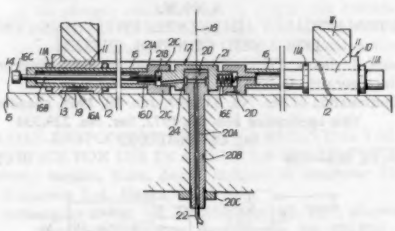
1. In a track assembly adapted for use with crawler-type vehicles and including a shaft adapted to be disposed in a substantially horizontal position, an element journalled on the shaft; a lubricant port opening to one end of the shaft and in fluid communication with the interface of the shaft and the element, and a removable plug received in said port for confining lubricant therein, the improvement wherein said plug is at least partially formed of translucent material extending from end to end of the plug so that the presence or absence of lubricant within said port can be ascertained by optical inspection of the translucent material exterior of the port without removing the plug from the port to facilitate inspection and/or maintenance said plug comprising an elastomeric sleeve having a frusto-conical outer surface and said transparent material comprising a rod received within and sealed against said sleeve and having a pointed end within said port.



4,209,206
ROTARY MOUNTING FOR USE ESPECIALLY WITH MEASURING APPARATUS

David R. McMurtry, Wotton-under-Edge, and Lionel J. Ackery, Bristol, both of England, assignors to Rolls-Royce Limited, London and Renishaw Electrical Limited, Gloucestershire, both of, England

Filed Aug. 10, 1978, Ser. No. 932,625
Claims priority, application United Kingdom, Aug. 20, 1977, 35019/77
Int. Cl.[2] F16C 32/06; B23Q 3/02
U.S. Cl. 308—9 12 Claims



6. A rotary mounting for use on a base having an upper surface, the mounting comprising a radial bearing having two bearing members relatively rotatable about a common axis, a plurality of workpiece support members spaced from said bearing in a plane perpendicular to said axis and having respective support surfaces by which the mounting is supportable, in use, on said upper surface, each support member having at the support surface thereof an aerostatic support means co-operating, in use, to establish aerostatic support for the support members on said upper surface, and link means connected between the respective support members and one of the bearing members thereby to locate the support members relative to said one bearing member.

4,209,207

THRUST BEARING ASSEMBLY

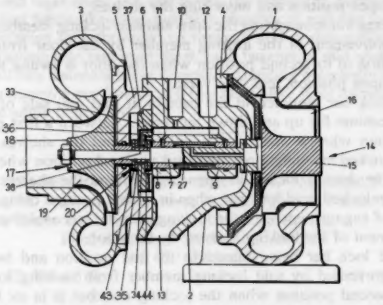
Heinz Schippers; Werner Branscheid; Erich Lenk, and Udo Hardt, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

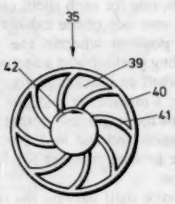
Filed Jul. 3, 1979, Ser. No. 54,413

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 7819938[U]

Int. Cl.² F16C *17/08*

U.S. Cl. 308—9 13 Claims





1. A thrust bearing assembly adapted for use in an exhaust gas turbocharger or the like and characterized by minimal frictional resistance, and comprising a housing; a shaft; a holding plate fixed to said housing and including a circular opening concentrically receiving said shaft and forming a concentric annular gap therebetween; a pair of flat, annular rings mounted on said shaft in an axially spaced apart and axially fixed relationship and receiving said plate therebetween to define a pair of opposing bearing surfaces on each side of said plate; duct means communicating with said annular gap for conveying pressurized lubricant thereto and so that the lubricant flows across each pair of bearing surfaces; and channel means positioned in at least one of each pair of opposing bearing surfaces for developing a hydrodynamic load bearing pressure in the lubricant between the bearing surfaces during relative rotation thereof, to thereby minimize frictional resistance and wear.

4,209,208

ROLLING BEARING FOR CONVEYOR ROLLS

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Aschfeld; Lothar Walter, Schweinfurt; Rainer Schurger, Schwanfeld, and Gunter Neder, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

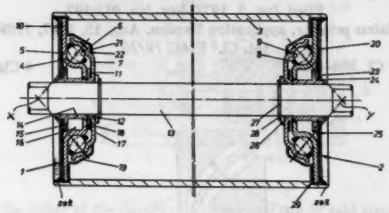
Filed Oct. 10, 1978, Ser. No. 949,512

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 7731602[U]

Int. Cl.² F16C *13/02, 33/76, 35/06*

U.S. Cl. 308—20 6 Claims

1. A bearing assembly for a belt support roll rotatably journalled on an axle comprising inner and outer bearing rings (5, 7) having confronting spaced apart sections defining inner and outer raceways (4, 6) for a plurality of rolling elements (9) and arranged at an angle to the bearing axis, a first annular flange (10) projecting radially outwardly of said inner bearing ring (5) adapted to be mounted at its outer periphery to a roll casing, a ring flange (17) directed inwardly from said inner bearing ring raceway, a second annular flange (11) projecting radially inwardly from said outer bearing ring (7) terminating in an axially extending shoulder (12) for supporting the bearing on the axle (13), a sleeve member (14) circumscribing the axle engaging said shoulder at one axial end, an annular rib (15) projecting from said sleeve directed outwardly, spaced axially from said ring flange and forming with the inner bearing ring raceway section and ring flange, an annular chamber (16) for a sealing agent disposed axially within the cross section of the bearing assembly.



4,209,209

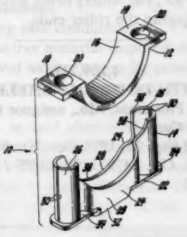
FABRICATED ENGINE MAIN BEARING CAPS

Terrence L. Stark, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1978, Ser. No. 935,175

Int. Cl.² F16C *9/02*

U.S. Cl. 308—23 5 Claims



1. A fabricated bearing cap comprising a bearing flange and a supporting base,

said base including a pair of laterally spaced tube-like column portions interconnected laterally along most of their length by spaced dual webs, and an end plate engaging one end of each of the column portions and also connecting said webs, said webs having semi-circular recesses at their edges opposite the end plate and centered between the column portions, and

said bearing flange comprising a single formed sheet metal member having a semi-circular central portion received near its opposite edges in said web recesses and a pair of flattened ears extending laterally oppositely from the central portion and seated on the ends of the column portions opposite from the end plate,

said bearing flange and said supporting base being secured together in a unitary assembly,

said end plate and said bearing flange ears having openings aligned with the interior of the tube-like column portions to receive bolt-like securing means engagable with said

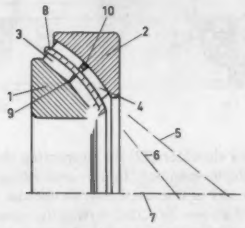
end plate for securing said flange ears against a mating bearing support.

4,209,210

SELF-ALIGNING TWO ROW THRUST ROLLER BEARING

Leif Blomqvist, and Göransson, both of Gothenburg, Sweden, assignors to Aktiebolaget SKF, Gothenburg, Sweden

Filed Jun. 5, 1978, Ser. No. 912,197
Claims priority, application Sweden, Aug. 15, 1977, 7709175
Int. Cl.[2] F16C *19/10*
U.S. Cl. 308—234 **4 Claims**



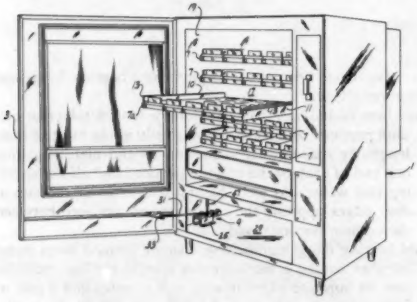
1. A self-aligning spherical thrust roller bearing comprising a pair of annular members having a common bearing axis and confronting coaxial raceways, the raceways being of arcuate cross-section, a plurality of rollers symmetrical about a central cross sectional plane through the roller and arranged in the annular space between the raceways in at least two rows, one of the arcuate raceways being a common raceway for the rollers of both rows, the other raceway being separate arcuate raceway sections, the axis of the rollers of each row being inclined in the same direction to the bearing axis, the angle of inclination of the rollers of each row being different and the mean angle between the bearing axis and the roller axis being between 20° and 90°, the rollers being guided without the aid of any flange engaging the roller ends.

4,209,211

VENDOR WITH DOOR AND SHELF INTERLOCK

James R. Alford, Florissant, Mo., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Sep. 28, 1978, Ser. No. 946,709
Int. Cl.[2] A47F *1/00*; G07F *11/00*
U.S. Cl. 312—215 **14 Claims**



1. In a vendor comprising a cabinet having a front door hinged at one side of the cabinet to swing open and closed, a plurality of shelves in the cabinet for holding items to be vended, each shelf being mounted for sliding movement in rear-to-front direction for being pulled out from a vending position within the cabinet to a loading position extending forward from the cabinet when the door is swung open, interlock means for locking the shelves in said vending position unless the door is swung to an open position enabling the shelves to be slid out without striking the door, and for locking the door in open position unless all the shelves are slid in to their vending position, thereby to prevent the door from being struck by a shelf if the shelf is pulled out with the door only partly open, and to prevent the door from being closed against a pulled-out shelf, said interlock means comprising:

a locking member mounted in the cabinet at said one side thereof for movement between a first position wherein the door is unlocked and the shelves are locked in vending position, and a second position for locking the door in open position and unlocking the shelves;

means interconnecting the door and said locking member for movement of the locking member by the door from its first to its second position when the door is swung to its open position, and vice versa;

a lock bar mounted in the cabinet at said one side of the cabinet for up and down movement between a first position wherein the door is unlocked and the shelves are locked in vending position, and a second position wherein the door is locked in open position and the shelves are unlocked, said lock bar when in its first position being out of engagement with the locking member to enable movement of the locking member by the door;

said lock bar being biased to its first position and being prevented by said locking member from moving to its second position when the locking member is in its first position, and being movable to its second position against the bias when the locking member is in its second position;

a series of detents, one for each shelf, each mounted on the cabinet at said one side of the cabinet for movement between a first position wherein the respective shelf is locked in vending position and a second position wherein it releases the shelf and locks the door in open position;

each shelf having a member at said one side of the cabinet engageable with the respective detent when the detent is in its first position and the lock bar is held in its first position by the locking member for locking the shelf in vending position;

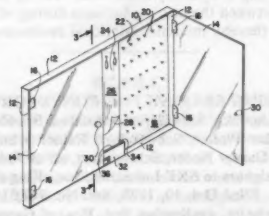
said member on each shelf moving the respective detent to its second position for release of the shelf when, with the lock bar in its second position, the shelf is pulled out, whereby, with the lock bar in its second position, one or more of the shelves may be pulled out at one time.

4,209,212

JEWELRY DISPLAY HOUSING

Darlene M. McGoldrick, P.O. Box 513, Randolph AFB, Tex. 78148

Filed Aug. 15, 1978, Ser. No. 933,718
Int. Cl.[2] A47F *5/08*
U.S. Cl. 312—245 **9 Claims**



1. A jewelry display housing comprising a rigid sheet, a plurality of walls fixedly secured to the marginal edges of said sheet and extending outwardly from one lateral surface thereof, a pair of doors, said pair of doors, hingeably secured to said plurality of walls, a wadding-like pad, said wadding-like

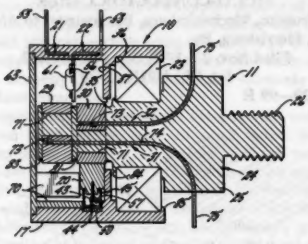
pad fixedly secured to said one lateral surface, a first fabric-like sheet, said first fabric-like sheet disposed covering said wadding-like pad and said one lateral surface, a second fabric-like sheet, said second fabric-like sheet having one marginal edge thereof disposed fixedly secured to the other lateral surface of said rigid sheet, a first portion of said second fabric-like sheet being disposed intermediate a portion of said marginal edges of said rigid sheet and a portion of one of said plurality of walls, the remaining portions of said second fabric-like sheet being disposed in flap-like fashion residing covering a portion of said first fabric-like sheet, the other end of the second fabric-like sheet being free from attachment to said first fabric-like sheet and said rigid sheet and said walls, the remaining portions of said first fabric-like sheet having a plurality of nail-like fasteners piercing therethrough and through said wadding-like pad and passing into said rigid sheet, each fastener of said plurality of nail-like fasteners being disposed extending outwardly from said remaining portions of said first fabric-like sheet forming an acute angle therewith.

4,209,213

BRUSH HOLDER AND SLIP RING ASSEMBLY

James M. Wussow, Vincentown, N.J., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Apr. 10, 1978, Ser. No. 894,526
Int. Cl.² G01L *1/22*
U.S. Cl. 339—5 R **11 Claims**



1. An electrical brush holder comprising a tubular housing molded of plastic, first and second axially spaced brushes guided for radial sliding within said housing, first and second axially spaced conductor strips each having a portion encapsulated within the plastic of said housing between the outer and inner sides of said housing, each of said strips also having a portion projecting outwardly from said housing and defining a terminal, and openings in said plastic in the inner side of said housing adjacent said brushes, said openings exposing parts of the encapsulated portions of said strips and enabling said first and second brushes to make electrical contact with the exposed parts of the encapsulated portions of said first and second strips, respectively.

4,209,214

MOVABLE ELECTRICAL CONTACT DEVICE

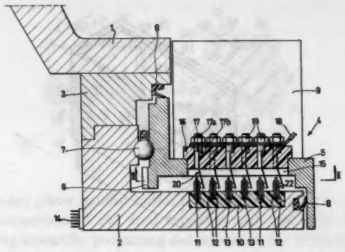
Joachim Martinez, Avallon, France, assignor to R.K.S., France

Filed Nov. 27, 1978, Ser. No. 964,011
Claims priority, application France, Dec. 2, 1977, 77 36373
Int. Cl.² H01R *39/00*
U.S. Cl. 339—5 M **5 Claims**

1. A movable electrical contact device comprising: two concentric members capable of relative rotation;

a plurality of cylindrical conductive rings affixed to a surface of the first of said members such that each of said conductive rings projects from said surface and is in axial alignment with both of said members, said conductive rings being comprised of two thin conductive circles and an electrically insulating material separating said circles; and

a plurality of pairs of contact blades affixed to a second of said members in a staggered arrangement relative to one another, the blades of each said pair contacting one and



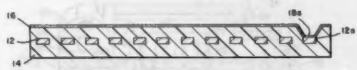
the other of the circles of a respective one of said conductive rings.

4,209,215

MASS TERMINABLE SHIELDED FLAT FLEXIBLE CABLE AND METHOD OF MAKING SUCH CABLES

Surendra Verma, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 24, 1978, Ser. No. 963,599
Int. Cl.² H01R *3/04, 13/38*
U.S. Cl. 339—17 F **4 Claims**



1. Shielded, flat, multiconductor circuitry, comprising:

a plurality of conductors;

insulation enclosing said conductors;

electrically conductive material disposed on the exterior of said insulation and having means for establishing repeated electrical contacts with at least one of said conductors; and

at least one gap in said electrically conductive material defining at least one location for coupling said plurality of conductors to terminal means, said electrical contact establishing means in conjunction with said one conductor maintaining electrical continuity of said electrically conductive material across said gap.

4,209,216

SOCKET INSERTION GUIDE

Ray G. Brooks, Irving, Tex., assignor to Convey, Inc., Irving, Tex.

Filed Oct. 4, 1978, Ser. No. 948,526
Int. Cl.² H01R *13/62*
U.S. Cl. 339—65 **5 Claims**

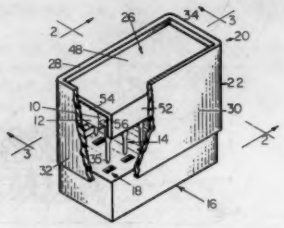
1. A socket insertion guide for an encapsulated electronics package having pins oriented to be inserted into socket contacts in substantially a single direction, comprising in combination:

a housing for retaining the encapsulated electronics package for the useful life of the package;

a pair of longitudinal placement guides, one longitudinal placement guide for each end of the encapsulated electronics package, extending beyond the distal ends of the pins, the distance between the insides of the longitudinal placement guides being slightly greater than the length of the socket; and

a pair of lateral placement guides, one lateral placement

guide for each side of the encapsulated electronics package, extending beyond the distal ends of the pins, the



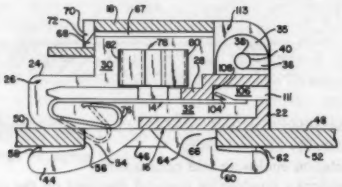
distance between the insides of the lateral placement guides being slightly greater than the width of the socket.

4,209,217

HOUSING FOR REMOVABLE MOUNTING ON PRINTED CIRCUIT BOARD

Bernard V. Gudaitis, Elgin, Ill., and Paul Maximoff, Upland, Calif., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Oct. 26, 1978, Ser. No. 955,239
Int. Cl.[2] H05K *1/12*
U.S. Cl. 339—75 MP **17 Claims**



1. A housing mountable on one side of a printed circuit board, comprising:

a base having first leg means depending therefrom and extending from said one side of the printed circuit board to the opposite side thereof for engaging said opposite side of said printed circuit board; and

a cover pivotally mounted on said base and having second leg means depending from said cover and movable through the same rotational angle as said cover on cover pivotal movement, said second leg means thereby being movable through an opening extending from said one side of said printed circuit board to said other side thereof in response to the movement of said cover for releasably engaging said opposite side of said printed circuit board, said second leg means cooperating with said first leg means to removably mount said connector in a fixed position on said one side of said printed circuit board.

4,209,218

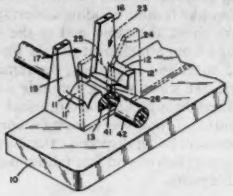
INSULATED ELECTRICAL CONDUCTOR LOCKING ARRANGEMENT AND METHOD

Richard B. Kosten, and Helmut G. Folgmann, both of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 28, 1978, Ser. No. 937,357
Int. Cl.[2] H01R *13/38, 13/58*
U.S. Cl. 339—97 R **4 Claims**

1. Locking means for locking an insulated electrical conductor to a terminal apparatus, said terminal apparatus including a base, a slot-type electrical contact terminal including a mouth proximate the top of said slot, said terminal extending upwardly from said base arranged to accept within said slot a first portion of said insulated electrical conductor penetrating said insulation and electrically connecting said conductor to said terminal, said locking means comprising:

at least one locking member of insulating material, said member integrally mounted to said base adjacent to and in alignment with one edge of said slot and a second portion of said insulated electrical conductor;



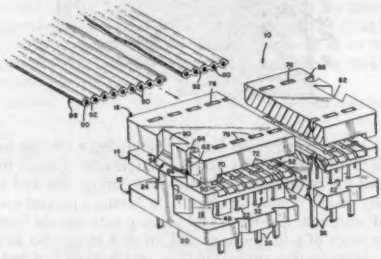
means adapted to cooperate with said locking member; and in response to the application of a downward force said means excising and guiding a portion of said locking member over said second portion of said insulated electrical conductor to lock said conductor to said terminal base.

4,209,219

METHOD AND APPAPRATUS FOR TERMINATING MULTI-CONDUCTOR CABLE

Nazario Proietto, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 22, 1978, Ser. No. 962,862
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **11 Claims**



7. A connector assembly for terminating multi-conductor flat flexible cable, said assembly comprising:

a housing of insulative material having a base member, an intermediate member, and a cover member, each said member having an aligned array of slots passing through the major surfaces thereof, first spacer means holding said intermediate member and said cover member in alignment with each other, second spacer means holding said intermediate member in alignment with said base member,

said second spacer means comprising at least one stud on one of said base and said intermediate members and a like recess in the other of said members aligned with a respective stud, each said stud having a stepped profile providing differential interference fit between said base and intermediate members and being received in a respective recess with interference fit so that said members are moved with respect to each other only upon application of force with the tighter fit holding said members in their closed condition,

a plurality of electrical terminals mounted in said base member, each said terminal having a first mating end and an oppositely directed insulation piercing conductor engaging end directed towards a respective slot in said intermediate member whereby a cable is terminated by first com-

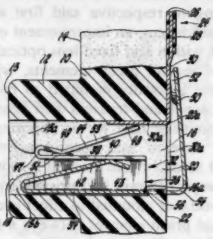
pressing it between said cover and said intermediate members to hold the conductors thereof in an aligned condition and then driving the terminals into said cable to make contact therewith.

4,209,220

WIPE-IN TERMINAL FOR PRINTED CIRCUITS

Teofil Szablowski, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 5, 1978, Ser. No. 912,324
Int. Cl.[2] H01R 9/08
U.S. Cl. 339—217 S **1 Claim**



1. In an electrical terminal having a resilient inclined tongue which is integrally connected to a support portion of the terminal in cantilever fashion by a reverse bend at one end of the tongue, said support portion being one side wall of a channel shaped body portion comprising spaced side walls connected by a web whereby the support portion is relatively rigid, the improvement comprising:

said tongue being connected to the one side wall support portion by a reverse bend of small radius and thence having a second bend of shallow V-shape immediately adjacent the reverse bend defining an obtuse angle having an apex, said tongue having a major portion between the apex and an opposite end of the tongue which has a length and outward projection which is substantially greater than the length and outward projection of the portion between the reverse bend and the apex so that the major portion of the tongue constitutes the sole electrical contact portion of the tongue when the tongue wipes a conductive strip against an insulative wall spaced outwardly of the one side wall, said apex of the second bend engaging the one side wall to provide a pivot which substantially isolates the reverse bend when the electrical contact portion of the tongue is depressed toward the one side wall.

4,209,221

TWO-PIECE SOCKET TERMINAL

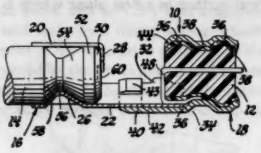
John M. Chupak, West Middlesex, Pa.; Joseph H. Gladd, Cortland, and James W. McNamee, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1978, Ser. No. 946,218
Int. Cl.[2] H01R 15/12; H01T 13/04
U.S. Cl. 339—223 S **6 Claims**

6. A terminal for detachably connecting an ignition wire or the like to a mating stud terminal comprising:

an attachment piece of crimpable material having a channel at one end for permanently attaching the terminal to an ignition wire or the like and a support at an opposite end including a pair of transverse arms, and

a socket piece of spring tempered metal having a split sleeve at one end for receiving a stud terminal and a longitudinal tongue at an opposite end, said longitudinal tongue having circumferential tabs and being disposed on the support and secured to the attachment piece by the pair of transverse arms being bent over opposite longitudinal edges of the longitudinal tongue and clampingly engaging portions of the longitudinal tongue spaced from the split sleeve, and ahead of the circumferential tabs to provide a mechanical interlock in the pull-off direction,



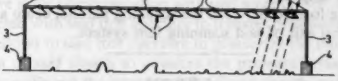
said socket piece having radial flange means for preventing over-insertion of the stud terminal and said split sleeve having inwardly projecting detent means for retaining the stud terminal therein.

4,209,222

INSTALLATION FOR UTILIZING SOLAR ENERGY WITH WAVELENGTH SELECTIVE REFLECTOR

Mario Posnansky, Ostermundigen, Switzerland, assignor to Bernardo Raimann, Trimbach, Switzerland, a part interest

Filed May 3, 1978, Ser. No. 902,318
Claims priority, application Switzerland, May 3, 1977, 5526/77
Int. Cl.[2] G02B 5/10; A01G 9/14; G02B 5/26
U.S. Cl. 350—1.6 **4 Claims**



1. An installation for utilizing solar energy, comprising a plurality of reflectors capable of tracking the position of the sun for focusing the solar rays on at least one operative region, the reflectors being disposed on a frame, wherein an enterable open space is provided between the frame and the ground, at least some of the reflectors including a layer predominantly reflecting the long-wave range of solar radiation and being permeable to the short-wave range of solar radiation for the purpose of utilizing the ground area shaded by the reflectors for growing plants.

4,209,223

SCANNING DEVICE

Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 830,352, Sep. 2, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,644
Claims priority, application Japan, Sep. 3, 1976, 51-105462
Int. Cl.[2] G02B 21/00
U.S. Cl. 350—6.1 **2 Claims**

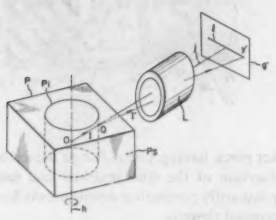
1. A scanning device capable of providing a light spot moving at a uniform velocity on a surface to be scanned, comprising:

a polygonal member deflector rotatable about a rotation axis at a constant speed, said polygonal member deflector having a transparent polygonal body provided with a cylindrical hollow portion having said rotation axis as its center axis;

a light source;

an optical system for receiving a beam from said light source

and directing the beam, which is stationary, from said center axis to a cylindrical surface formed by cylindrical hollow portion perpendicularly to the cylindrical surface, the stationary beam being convergent at a focal line of the cylindrical surface in a first plane which is perpendicular



to the center axis, and being afocal in a second plane perpendicular to the first plane so that an afocal parallel beam is provided from said deflector;

a scanning optical system disposed between said polygonal member deflector and said surface, said scanning optical system has a deflection characteristic being expressed as:

$$y' = (n-1)f \arctan\left(\frac{\sin\theta}{n-\cos\theta}\right)$$

where

y': the distance between an image of the spot and the optical axis of the scanning lens system,

n: refractive index of the polygonal member,

f: focal length,

θ: angle formed between the scanning parallel beam and the optical axis of said scanning lens system.

4,209,224

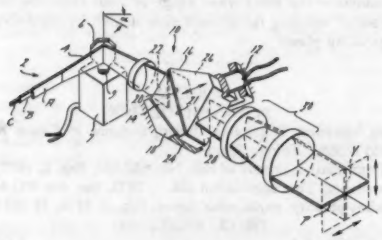
PRISMATIC BEAM ROTATOR FOR AN OPTICAL BEAM PROJECTOR

George W. Stewart, Jr., Costa Mesa, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.

Continuation-in-part of Ser. No. 859,616, Dec. 12, 1977. This application Oct. 5, 1978, Ser. No. 948,927

Int. Cl.[2] G02B *27/17*

U.S. Cl. 350—6.4 8 Claims



1. In a controlled beam projector, which includes:

a source of radiation controllable to emit a generally rectangular cross-sectional beam;

a scanner located to receive said emitted radiation and to scan said radiation over a predetermined frequency and predetermined angle in a direction orthogonal to the length dimension of said beam cross-section;

a fixed lens optical system located to receive said scanned radiation and to project said emitted radiation in alternate first and second scanned beams having their respective cross-sectional length dimensions orthogonally oriented with respect to each other;

a modulator for pulse modulating said source of radiation at a plurality of pulse rates over first and second predetermined ranges of frequencies corresponding to said first and second scanned beams;

a scan circuit associated with said scanner for controlling the angle of scan in accordance with a predetermined time variable function; and

means programmed for generating said time variable function and supplying synchronizing signals to said modulator and said scan circuit so that said pulse modulated radiation over said first and second predetermined ranges of frequencies occurs within the controlled angle of scan corresponding to respective said first and second projected scanned beams; an improvement comprising:

a beam rotator within said fixed lens optical system, including first and second prism elements, wherein said first prism element is fixedly mounted to receive said beam from said scanner and transmit said beam from a major optical transmitting face to an opposing major optical transmitting face of said second prism element, and wherein said second prism element is mounted for movement with respect to said first prism element;

a vibration transducer mounted to effect cyclical movement of said second prism element between a first state where said first and second prism elements are evenly separated over opposing major optical transmitting faces and a second state where said first and second prism elements are in optical contact along said opposite major faces; and

circuitry for driving said transducer at a frequency corresponding to said scan frequency.

4,209,225

ADJUSTABLE MICROSCOPE FOR FOLLOWING AXIAL DISPLACEMENT OF AN OBJECT

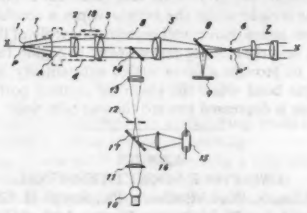
Abe, Kumiomi, and Susumu Fujita, both of Kobe, Japan, assignors to Konan Camera Research Institute, Kobe, Japan

Filed Jan. 15, 1979, Ser. No. 3,105

Claims priority, application Japan, Jan. 23, 1978, 53/6542

Int. Cl.[2] A61B *3/10*; G02B *7/04, 23/16*

U.S. Cl. 350—46 2 Claims



1. A microscope comprising objective lens means having a contact surface at the front end, which is to be placed in contact with an object to be observed, collimating means located to the rear of said objective lens means for converting a light beam coming through said objective lens means from a predetermined optical point adjacent to said contact surface of said objective lens means into a parallel beam, imaging means located to to the rear of said collimating means for focusing said parallel beam to form an image of said optical point at a predetermined position, said objective lens means and collimating means being fixedly positioned one relative to the other and axially movable with respect to said imaging means, and means for urging said objective lens means and collimating means together away from said imaging means and in the direction of said object, whereby said contact surface of said objective lens means is maintained in contact with the object to be observed

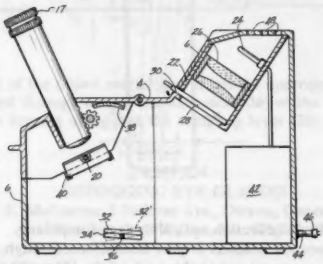
and will follow axial movement of the object without displacement of the image from said predetermined position.

4,209,226

OPTICAL VIEWING INSTRUMENT INCLUDING CAPILLARY TUBE AND HOLDER

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405, and Robert A. Levine, 31 Pilgram La., Guilford, Conn. 06437

Filed Jan. 22, 1979, Ser. No. 5,043
Int. Cl.[2] G02B *25/02, 21/06*
U.S. Cl. 350—85 **6 Claims**



1. An instrument for viewing samples which are contained in capillary tubes, said instrument comprising:

(a) a closed housing;

(b) a stage in said housing for holding the capillary tube, said stage comprising a block of transparent material having a groove for containment of the capillary tube, a transparent capillary tube in said groove, said groove opening through a surface of said block which surface is disposed for viewing by said optical system, said groove containing a liquid having substantially the same index of refraction as the material of the capillary tube, and means for conforming a surface of the liquid to a planar configuration;

(c) an optical system for viewing the capillary tube;

(d) a light source for producing light for illuminating the capillary tube; and

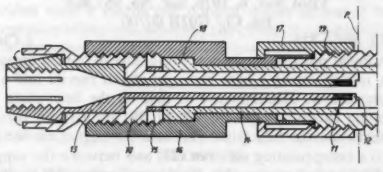
(e) adjustable reflecting means in said housing for providing both trans- and epi-illumination of the capillary tube.

4,209,227

END STRUCTURE FOR A BUNDLE OF OPTICAL FIBRES ARRANGED IN A HEXAGON

Jacques Dubos, and André Jacques, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 2, 1979, Ser. No. 772
Claims priority, application France, Jan. 6, 1978, 78 00307
Int. Cl.[2] G02B *5/16*
U.S. Cl. 350—96.22 **7 Claims**



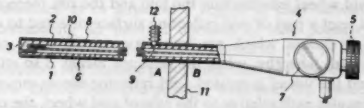
1. An end structure for a bundle of optical fibres having an hexagonal arrangement, comprising a hollow cylindrical body whose outer surface, which is centered relative to its axis, is a reference surface for the positioning of other members forming the end structure and in which said fibres are placed, said fibres being maintained by a malleable sleeve placed inside said body which grips them so that they are arranged in a hexagon at the end to be connected, the end structure further comprising a cylindrical fittable alignment member, which bears on said outer surface, having an end cut away so as to form a regular profile having at least three points, the corners of which are, in the same section plane and at 120°, said alignement member being fixed to said body by a fixing device which permits an angular adjustment of the respective positions of the corners of said hexagon formed by the fibres and of said points, the length of the alignment member being such that the plane of the end to be connected is the median plane of said cut-away end.

4,209,228

PRESSURE-LIGHT ENDOSCOPE

Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,419
Claims priority, application Japan, Sep. 28, 1977, 52-129286[U]
Int. Cl.[2] G02B *5/17*
U.S. Cl. 350—96.26 **4 Claims**



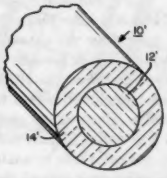
1. A pressure-tight hermetically sealed endoscope comprising a fiber optic bundle and a sheath covering said fiber optic bundle, an inner cavity portion formed within said sheath, said sheath adapted to be placed in a region of high pressure, a first aperture in air communication with said inner cavity, a bellows connected with said first aperture to transfer pressure acting on said bellows to said first aperture to pressurize the inner cavity portion of said sheath to equalize the pressure acting on the interior walls and the exterior walls of said sheath, said bellows being in air communication with said region of high pressure.

4,209,229

GLASS-CERAMIC COATED OPTICAL WAVEGUIDES

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,508
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.34 **8 Claims**

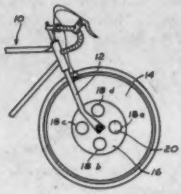


1. An optical waveguide composite filament comprising a waveguide member and an outer coating layer, the waveguide being a vitreous material composed of one or more oxides, and the outer coating layer having a thickness up to about 250 microns and being composed of a glass-ceramic material wherein the primary crystal phase is selected from the group of beta-eucryptite solid solution and beta-quartz solid solution and the average crystal size is below 7000 A so that said coating layer is transparent.

4,209,230
REFLECTOR DEVICE FOR BICYCLES

John A. Perkins, 1905 Laurelwood, Kalamazoo, Mich. 49002

Continuation-in-part of Ser. No. 905,999, May 15, 1978, abandoned. This application Jul. 3, 1978, Ser. No. 921,446
Int. Cl.[2] G02B 5/12
U.S. Cl. 350—99 34 Claims



1. In a reflector device for a wheeled vehicle in which a wheel thereof rotates about a fixed axle bolt which is clamped to the frame of said vehicle which comprises

reflector means having a reflecting surface;

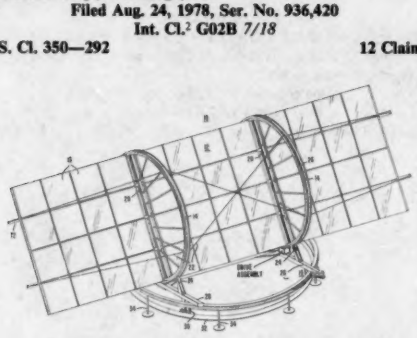
reflector-attaching means for affixing said reflector means to said wheel intermediate the hub and the rim thereof with at least a part of said reflecting surface oriented to reflect light beams which are transverse to the plane of said wheel, whereby, when the reflector means is so attached and the wheel is rotated, said reflector means moves in a circular path relative to the axle of said wheel, the combination therewith of scanning means comprised of opaque, sheet-form material having at least one scan-aperture therein and,

mounting means operative when said axle bolt is clamped to said frame to fix said scanning means in a position such that a scan-aperture is opposite said circular path and such that transverse light beams can impinge on said reflecting surface only by passing through a scan-aperture.

4,209,231
HELIOSTAT ASSEMBLIES

Robert K. Sayre, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,420
Int. Cl.[2] G02B 7/18
U.S. Cl. 350—292 12 Claims



1. A heliostat assembly comprising:

a plurality of mirrors affixed in a generally flat array having a front surface;

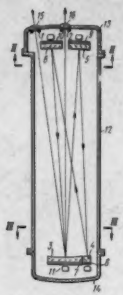
a plurality of curved elevation rims affixed to and extending substantially perpendicular to said mirror array, said rims including a portion disposed in front of said front surface substantially parallel to said front surface;

means for rotating said rims so as to vary the elevational angle of said mirror array whereby upon rotation to said portion said front surface is disposed downwardly.

4,209,232
MULTIPLE REFLECTION OPTICAL SYSTEM

Semen M. Chernin, prospekt Vernadskogo, 58, kv. 49, Moscow, U.S.S.R.

Filed Feb. 26, 1979, Ser. No. 15,218
Int. Cl.[2] G02B 5/10
U.S. Cl. 350—294 1 Claim



1. A multiple reflection optical system comprising:

an entrance slit adapted to pass beams therethrough;

a first concave mirror in the path of the beams coming in through said entrance slit;

a first mirror in the path of the beams reflected by said first concave mirror, spaced therefrom by a distance which is about 1.5 times the focal length thereof;

a second concave mirror with a focal length which is about 1.5 times the focal length of said first concave mirror, said second concave mirror having smaller geometric dimensions than said first concave mirror, said second concave mirror being arranged in opposition to said first mirror in the path of the beam reflected thereby and spaced therefrom by a distance which is substantially equal to the focal length of said second concave mirror, said second concave mirror being arranged adjacent to said first concave mirror;

a second mirror arranged in the same plane with said first mirror, in the path of the beams reflected by said second concave mirror;

an exit slit arranged in the same plane with said entrance slit;

said first and second mirrors defining a group of identical mirrors arranged symmetrically with respect to one of said slits.

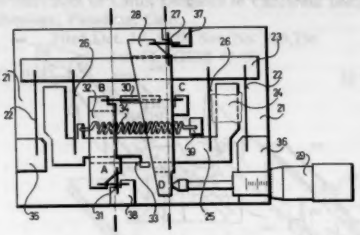
4,209,233
LINEAR POSITIONING DEVICE, PREFERABLY FOR OPTICAL MEASUREMENTS

Gyula Eisler, Budapest, Hungary, assignor to MTA Központi Fizikai Kutató Intézete, Budapest, Hungary

Filed Nov. 6, 1978, Ser. No. 957,803
Int. Cl.[2] G02B 00/00
U.S. Cl. 350—321 2 Claims

1. A linear positioning device, preferably to optical measurements, incorporating a base plate, an object carrier and a micrometer-screw, characterized in that on the base plate (21) protruding extensions (35, 36, 37, 38, 39) are formed, furthermore between the base plate (21) and the object carrier (24) there is a compensating member (23) and between the support (25) of the object carrier (24), the object carrier (24) itself and the micrometer-screw (29) there is an actuating lever (28), whereby the compensating member (23) is connected to the extensions (35, 36) of the base plate (21) by means of leaf-springs (22) and simultaneously it is connected by leaf-springs (26) to the support (25), while said support is connected by a spiral spring (34) to the extension (39) of the base plate (21), furthermore the actuating lever (28) of the device is connected

by means of a transverse-spring-loaded joint (27) to the extension (37) of the base plate (21) and by the leaf-spring to the



support of the object carrier and at last the micrometer-screw (29)—led through one of the extension (36) of the base plate (21)—is bearing up against the actuating lever (28).

4,209,234

DEFOGGING EYE GLASSES

Donald E. McCooeye, 1 Sullivan Ave., Ottawa, Ontario, Canada

Filed Jun. 2, 1978, Ser. No. 911,969
Int. Cl.² G02C *11/08*
U.S. Cl. 351—62 **9 Claims**

1. In a frame for supporting lenses in front of the eyes of a wearer comprising rims for the lenses, a nose bridge joining the rims, and hinged temples pivotably secured to the outside edges of the rims, the improvement consisting of an electronic lens defogging system incorporated into the frame, the system comprising an electrical circuit means comprising conductive circuitry associated with the frame, a first electrical contact on one side of each rim so as to be in contact with conductive means on the lens when in position in the rim, and a corresponding second electrical contact not contacting the first and located on the opposite side of each rim so as to be in contact with said conductive means on the lens when in position in the rim, the circuit means arranged to carry current from a power source positioned in the frame to the first electrical contact in each rim and from the second electrical contact in each rim back to the power source, and circuit on-off switch means associated with one of the temples, the system being further provided with a thermostat control means activated by the temperature of the lens, whereby the circuit is completed when the temperature of the lens falls below a predetermined temperature.

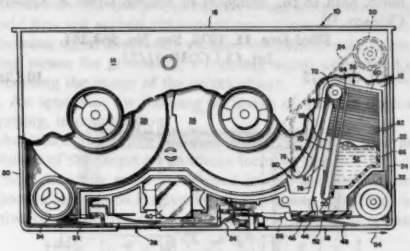
4,209,235

FILM CASSETTE PROCESSOR HAVING CAPILLARY GROOVES

Frank M. Czumak, Derry, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 4, 1979, Ser. No. 35,939
Int. Cl.² G03C *11/00*
U.S. Cl. 352—78 R **9 Claims**

1. In a film cassette containing a strip of photographic film movable in a given direction, a fluid processor defining a first chamber constructed to store processing fluid and a second chamber communication with the first chamber and into which the processing fluid is released for deposition onto the film strip by gravity through a nozzle opening in the processor whenever said cassette is in a processing orientation, the processor having a passage extending from an interior thereof to an exterior thereof, and an actuator for releasing the processing fluid from the first chamber to the second chamber, the improvement comprising:



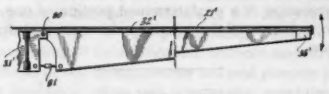
a plurality of capillary grooves formed in said processor and positioned in or adjacent a region at least substantially surrounding an internal opening of said passage, said grooves dimensioned and configured to trap, by capillary adhesion, any residue processing fluid and thereby inhibit flow thereof into said passage whenever the cassette has orientations other than the processing orientation for enabling flow of the fluid by gravity towards said passage.

4,209,236

SOLAR CENTRAL RECEIVER HELIOSTAT REFLECTOR ASSEMBLY

Richard H. Horton, Schenectady, and John J. Zdeb, Clifton Park, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,400
Int. Cl.² G02B *5/08*
U.S. Cl. 353—3 **14 Claims**



1. A heliostat reflector assembly for a solar energy system comprising:

A. a stretchable planar reflector;

B. a frame supporting said reflector, said frame having selectively operable means for stretching said reflector and positioning said reflector in a condition of optical flatness including a plurality of tensioning devices disposed about the periphery of said reflector and means mounting said tensioning devices so as to be selectively individually adjustable relative to said frame in a direction generally normal to the plane of said reflector, said frame comprising a central hub having a plurality of elongated spoke-like beams, each having its inner end secured to and each radiating outwardly from said hub, said beams being individually secured to their radially outer ends to said reflector at spaced points near the periphery of said reflector by said tensioning devices, one associated with each of said beams, each of said beams being pivotally secured to said hub at one axial side of its inner end, and each of said tensioning devices comprising an adjustable turnbuckle mechanism disposed between and connected to said hub and the radially inner end of a beam at its other axial side

to permit selective adjustment of the position of the radially outer end of the beam; and

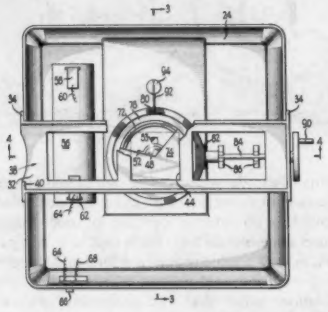
C. means for supporting said frame.

4,209,237

DRAWING DEVICE

Burton C. Meyer, Downers Grove, and Wayne A. Kuna, Elmhurst, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,351
Int. Cl.[2] G03B *21/22*
U.S. Cl. 353—75 **10 Claims**



1. A drawing device, comprising:

a housing including a top surface defining the drawing surface and a compartment for positioning an image carrier;

an image carrier comprising a film strip including a plurality of descrete frames, each of said discrete frames including a portion of a total image;

a source of illumination positioned in said compartment for sequentially projecting said discrete portion image from the carrier onto said drawing surface;

means for indexing said film strip relative to said source of illumination to project subsequent image portions in registry with previous image portions; and

means for shielding said source of illumination to permit projection of a predetermined portion of one of the discrete frames of the image carrier onto said drawing surface.

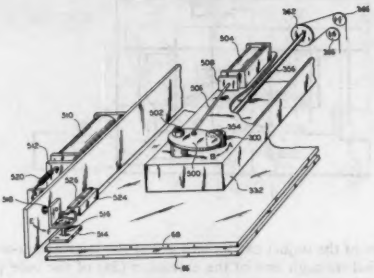
4,209,238

MICROFILM TRANSPORT WITH SHUTTERED LENS AND GLASS FLAT CONTROL

David G. Stites, Elgin; John R. Flint, Barrington, and Michael L. Kreuser, Evanston, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,352
Int. Cl.[2] G03B *21/20, 23/12*
U.S. Cl. 353—85 **2 Claims**

1. In a film reader comprising a lens and associated film transport means and also a lamp and associated lamp circuit means therefore, a supply reel and take up reel having film thereon, means for moving film from one of said reels to the other and then stopping it to project a selected image thereon through said lens by means of the lamp and associated lamp circuit means, and means for switching said lamp circuit means between two modes, a first mode activated during transport of the film which energizes the lamp at a low level resulting in insufficient lamp intensity to project a readable image, and a second mode activated after the film is stopped which energizes the lamp at a high level resulting in sufficient lamp intensity to project a readable image, a pair of glass flats with one glass flat positioned on either side of the film and an electrically operated solenoid for opening said glass flats after said lamp is energized at the low level and before said film is transported and for closing said glass flats after said film is transported and before the lamp is energized at the high level, and microprocessor means for controlling the film transport means,



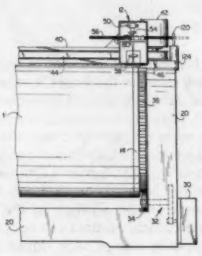
glass flat solenoid and lamp circuit switching means, whereby the viewer does not see either a collapse of a focused image or a blurred montage of images being moved across a screen.

4,209,239

PLOTTING APPARATUS HAVING AN ADJUSTABLE PLOTTING HEAD

Kenneth O. Wood, Ellington, and Robert S. Alford, Vernon, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Sep. 14, 1977, Ser. No. 833,374
Int. Cl.[2] G03B *41/00*
U.S. Cl. 354—4 **31 Claims**



1. In a plotting apparatus having a plotting head which contains an adjustable instrument for generating graphic images on a sheet of plotting material and including reversible drive means for translating the plotting head and material back and forth relative to one another whereby graphic images can be produced at different locations on the sheet material, the improvement comprising:

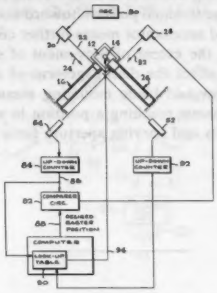
control means mounted on the plotting head and having a member movable in one and an opposite sense relative to the head to reversibly adjust the instrument generating the graphic images on the plotting material; and

actuating means mounted in the plotting apparatus and separated from the plotting head to selectively engage the movable member of the adjustable instrument, the actuating means when engaged with the movable member being cooperative with the reversible drive means to produce relative movement of the member and the head in said one and an opposite sense for reversible instrument adjustment with translation of the actuating means and plotting head relative to one another by the drive means.

4,209,240
RETICLE EXPOSURE APPARATUS AND METHOD

Ivan E. Sutherland, Santa Monica, and Charles L. Seitz, San Luis Rey, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 10, 1978, Ser. No. 949,756
Int. Cl.[2] G03B 41/00
U.S. Cl. 354—4 12 Claims



1. Apparatus for forming an integrated circuit comprising:
a first light source-holding platform;
a second substrate-holding platform;
first and second means for moving said platforms in directions largely transverse to each other; and
a frame for mounting over a floor;
said first moving means including a pair of resilient sheet-like members extending substantially parallel to each other, each member having inner and outer ends connected respectively to said platform and said frame so that the members flex to permit platform movement, whereby to provide noise-free platform movement.

7. A method for forming a precision pattern in a work piece, comprising:
moving an energizable tool relative to said work piece;
accurately sensing the position of the tool relative to the workpiece along at least two perpendicular directions; and
energizing the tool to apply it to locations on the work piece only when the tool is at predetermined locations, as measured along both of said directions, relative to the work piece;
said step of energizing being performed while said tool continues to move relative to said work piece.

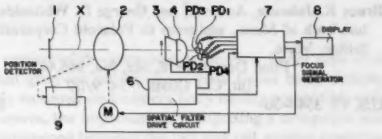
4,209,241
PHOTOELECTRIC RANGEFINDER

Yasuhiro Nanba, Osaka, and Nobuyuki Taniguchi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1978, Ser. No. 950,517
Claims priority, application Japan, Oct. 12, 1977, 52-122708; Oct. 26, 1977, 52-129049
Int. Cl.[2] G03B 3/10, 7/08
U.S. Cl. 354—25 30 Claims

1. An apparatus for automatically focusing an image of a target object, comprising in combination:
at least first and second photoresponsive element means, each for producing a photoresponsive signal indicative of the intensity of light received thereby;
an optical system for transmitting rays of light carrying an image of the target object towards said at least first and second photoresponsive element means;
a stationary spatial filter assembly disposed in the optical path between the target object and said at least first and second photoresponsive element means having an electrically controllable shiftable optical density distribution for electro-optically scanning said rays of light transmitted toward said at least first and second photoresponsive element means;
a scanning means connected to said spatial filter assembly for electrically causing said optical density of said spatial filter assembly to scan at a predetermined rate;
a detecting means connected to said first and second photoresponsive element means for detecting the difference in phase between said photoresponsive signals generated by said first and second photoresponsive element means; and
a focusing signal generation means connected to said detecting means for generating a focusing signal utilizable for focusing the image of the target object.

28. An apparatus for focusing an image of a target object, comprising, in combination:
a phototaking objective lens means movable for focusing an image of the target on an image forming plane;
a focus detecting means connected to said phototaking objective lens means for generating a focusing signal indicative of the degree and direction of the deviation of said



phototaking objective lens means from the optimum position for focusing the image of the target object;
a storing means connected to said focus detecting means for storing said focusing signal when said phototaking objective lens means is at an initial position;
a position detecting means connected to said phototaking objective lens means for generating a position signal indicative of the relative displacement of said phototaking objective lens means from said initial position;
a comparator connected to said storing means and said position detecting means for generating an output when said focusing signal stored in said storing means has a predetermined relationship with said position signal; and
a display unit connected to said storing means, said position detecting means and said comparator for displaying the focusing condition of said phototaking objective lens means according to the relationship between said focusing signal stored in said storing means and said position signal and for displaying when said comparator generates said output signal.

4,209,242
EXPOSURE CONTROL DEVICE FOR AUTOMATIC FOCUSING CAMERA

Kiyoshi Kitai; Yukio Morino; Shogo Kato, and Ichiro Nemoto, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,729
Claims priority, application Japan, Nov. 18, 1977, 52-138735
Int. Cl.[2] G03B 7/08, 9/08, 13/02
U.S. Cl. 354—25 5 Claims

1. An exposure control device for an automatic focusing camera capable of automatically focusing the photographic lens thereof by a system actuated by a signal produced by a focus detection circuit when the distance between the object to be photographed and the camera is detected, the device comprising an exposure control circuit for producing an exposure completion signal; an electromagnet magnetized in response to the focus detection signal produced by said focus detection circuit and demagnetized in response to the exposure control circuit; a photographic lens focusing member movable in response to a shutter release operation and stopped in response to

the magnetizing of said electromagnet; and an exposure device actuated to open to start the exposure after said photographic

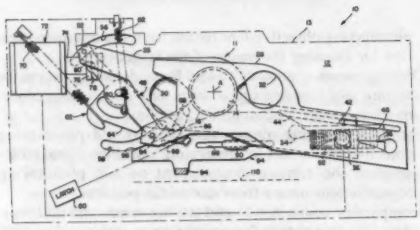
lens focusing member is stopped and closed in response to the demagnetizing of said electromagnet.

4,209,243

SHUTTER AND TRIM APPARATUS

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1978, Ser. No. 965,491
Int. Cl.[2] G03B 7/14, 9/00
U.S. Cl. 354—30 **23 Claims**



1. A photographic camera apparatus of the type having means for defining a film plane and an optical path for transmitting light from a scene along the optical path to expose photosensitive film located in the film plane, said apparatus comprising:

a blade mechanism;

means for mounting said blade mechanism for movement between one terminal position in which said blade mechanism is in light blocking relation with respect to the optical path so as to preclude scene light from being transmitted along the optical path to the film plane and another terminal position in which said blade mechanism is in light unblocking relation with respect to said optical path so as to allow the passage of scene light to the film plane, said blade mechanism being structured to maintain its said light blocking relationship with respect to the optical path upon its initial displacement from its said one terminal position toward its said other terminal position and to thereafter define a progressively varying range of aperture sizes upon its continued displacement toward its said other terminal position; and

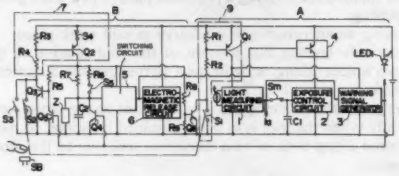
actuable drive means for displacing said blade mechanism between its said one and other terminal positions, said drive means comprising accelerator means for initially accelerating said blade mechanism from its said one terminal position towards its said other terminal position and for thereafter releasing said blade mechanism at a determinate velocity prior to said blade mechanism reaching a position in which it defines any one of its said varying aperture sizes, allowing continued displacement of said blade mechanism through said range of aperture sizes at substantially said determinate velocity, said drive means additionally including return means for driving said blade mechanism toward said one terminal position back through said range of aperture sizes to complete a photographic exposure cycle, said accelerator means also comprising an accelerator member disposed for limited movement within the locus of travel of said blade mounting means and resilient means for yieldably biasing said accelerator member to move into engagement against said blade mounting means so as to drive said blade mechanism from said one terminal position toward said other terminal position, said accelerator means further comprising means for limiting the extent of movement of said accelerator member to effect the disengagement of said accelerator member from said blade mounting means prior to said blade mechanism reaching a position in which it defines any one of its said varying aperture sizes.

4,209,244

LIGHT RESPONSIVE CAMERA ACTUATION CONTROL

Masayoshi Sahara, Sennan, and Masaaki Nakai, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1978, Ser. No. 893,397
Claims priority, application Japan, Apr. 18, 1977, 52/44939
Int. Cl.[2] G03B 7/08, 17/18, 17/40
U.S. Cl. 354—51 **14 Claims**



1. Camera control circuitry, comprising:

a light measuring circuit for generating an output representative of a scene to be photographed;

electromagnetic means for initiating camera operation;

an energization circuit for energizing said electromagnetic means;

a power supply circuit for supplying electric energy to said light measuring circuit;

a switch member for actuating said power supply circuit;

a circuit for self-maintaining the actuated condition of said power supply circuit;

a delay circuit for generating a first output signal when a given time period has lapsed after the actuation of said power supply circuit, said energization means being connected to said delay circuit to be energized by said first output signal and said power supply circuit being connected to said delay circuit to energize the latter;

a detecting circuit for generating a second output signal when said output from said light measuring circuit exceeds a given limit; and

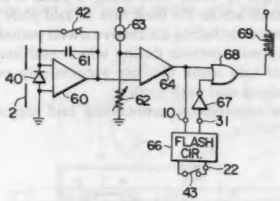
means for preventing the operation of said delay circuit and said self-maintaining circuit in response to said second output signal.

4,209,245

LONG TIME EXPOSURE PREVENTING DEVICE FOR CAMERA WITH ELECTRONIC FLASH

Masahiro Kawasaki, and Yoshio Sawada, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,517
Claims priority, application Japan, Sep. 22, 1977, 52-127931[U]
Int. Cl.[2] G03B 7/08, 15/03
U.S. Cl. 354—51 10 Claims



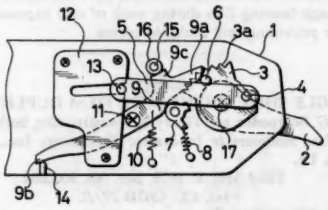
1. In a camera system having a shutter mechanism, a light measurement system to generate a shutter closing signal in response to a correct exposure signal indicative of a correct exposure value, an electronic flash to emit a flash of light in synchronism with the opening of the camera shutter and to suspend the flashing operation in response to a shutter closing signal, the improvement comprising: logic means for generating a flashing operation signal indicative of the completion of the flash operation, and for generating said shutter closing signal by a logical sum operation of the corrct exposure signal and the flashing operation signal.

4,209,246

FILM WINDING MECHANISM

Katsuhiko Nomura, Kawagoe, and Hirao Monde, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,610
Claims priority, application Japan, Sep. 16, 1977, 52-124685[U]
Int. Cl.[2] G03B 17/42, 19/12
U.S. Cl. 354—153 10 Claims



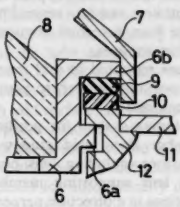
1. A camera film winding mechanism comprising: A camera having a movable mirror, a winding lever rotatably mounted on said camera for movement to advance film, a film winding sprocket means to receive film as it is wound, loading means responsive to movement of said lever to load said mirror for subsequent movement and locking means responsive to said loading means to block the movement of said winding sprocket means when said mirror is loaded.

4,209,247

ENVIRONMENTALLY PROTECTED CAMERA WITH AN INTERCHANGEABLE DRAWING TYPE FINDER

Fumio Urano, Omiya; Akihiro Arai, Urawa; Takumi Kobayashi, Tokyo; Eiji Yamamori, Tokyo; Norimichi Takahashi, Tokyo, and Junji Umetsu, Kita, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 970,094
Claims priority, application Japan, Dec. 20, 1977, 52-154134
Int. Cl.[2] G03B 13/02
U.S. Cl. 354—219 11 Claims



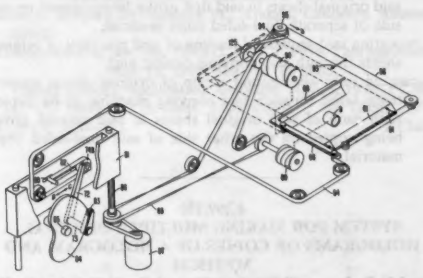
1. In a camera of the interchangeable view finder type with rails or rail grooves and having a view finder body slidably detachably mounted on a camera body having compatible rails or rail grooves, the improvement comprising a composite seal element interposed between the rail and rail groove combination and the finder body, said composite seal element comprising a relatively high friction viscoelastic member means which is in compression for forming an environmental seal when said interchangeable view finder is mounted on said camera body, and low friction strip member means for permitting low friction sliding movement between said view finder body and said rail and groove combination.

4,209,248

CONTINUOUSLY VARIABLE REDUCTION COPIER OPTICS SYSTEMS

David K. Gibson, Boulder, and Rick O. Jones, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 721,125, Sep. 7, 1976, abandoned. This application May 10, 1978, Ser. No. 904,706
Int. Cl.[2] G03G 15/28
U.S. Cl. 355—8 111 Claims



1. A continuously variable reduction imaging system for an electrophotographic copying machine wherein documents to be copied are typically of various rectangular sizes, comprising:

a glass platen mounted on said machine for supporting said documents of various sizes in a document plane, said documents located on said document plane along at least one common reference edge;

a photoconductive surface mounted in said machine;

main motive means operatively connected to said photoconductive surface for moving said surface in said machine;

a source of illumination for illuminating said document plane;

an optics system for directing light from the illuminated document plane to an image plane on said photoconductive surface, said optics system including a lens in a lens barrel and means for adjusting said lens to obtain continuously variable magnification;

a lens supporting member mounted in said machine for continuous movement along a path to a first position to produce a first image sized approximately the same as a first document area and to a second position to produce a second image from a second document area larger than said first document area;

lens guide means mounted in said machine for supporting said lens supporting member, to provide a guideway for lens movement; and

an optics positioning system for positioning said lens supporting member along said guideway to continuously variable positions including lens positioning means for shifting said lens supporting member to continuously variable positions in a direction perpendicular to the magnification axis,

whereby said documents of various rectangular sizes are copied onto a common size copy paper.

4,209,249

METHOD AND APPARATUS FOR GENERATING DUPLEX COPIES ELECTROPHOTOGRAPHICALLY FROM SIMPLEX ORIGINALS

Gary A. Clark, and Carl A. Queener, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1978, Ser. No. 903,277
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 R **29 Claims**

1. A method for generating duplex copies from simplex original sheets to be copied, said method comprising:

providing a plurality of original sheets each of which has a side to be copied;

sequentially feeding said plurality of original sheets through a copying device with said original sheets being fed therethrough by alternating first and second groups with each said group including different ones of said original sheets to be copied;

causing only said first group of original sheets sequentially fed through said copying device to be copied with each of said original sheets in said first group being copied on one side of separate dual-sided copy material;

repeating said sequential feeding of said plurality of original sheets through said copying device; and

causing only said second group of original sheets sequentially refed through said copying machine to be copied with each of said original sheets in said second group being copied on the other side of said dual-sided copy material.

4,209,250

SYSTEM FOR MAKING MULTIPLE ORIGINAL HOLOGRAMS OR COPIES OF A HOLOGRAM AND METHOD

Randall P. James, 30 Winfield St., and David C. Schmidt, 454 Shotwell St., both of San Francisco, Calif. 94110

Filed Dec. 26, 1978, Ser. No. 973,087
Int. Cl.[2] G03B *27/00, 27/52*
U.S. Cl. 355—18 **22 Claims**

1. A system for making multiple copies of a given image bearing film on successive longitudinal segments of a continuous length of blank film, said system comprising:

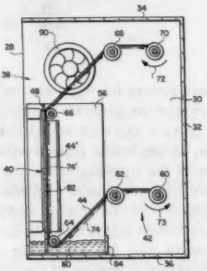
(a) means for producing a beam of electromagnetic radiation capable of passing through and interacting with said given image bearing film and said blank film during predetermined exposure periods when the two are held in predetermined positions relative to one another for copying the image from the given film onto the blank film;

(b) means for supporting said image bearing film in a predetermined planar position;

(c) a plate member fixedly located behind and in confronting relationship with the back face of said image bearing film, said plate member having a predetermined index of refraction and being transparent to said beam to allow passage of said beam therethrough;

(d) means for providing intermittent movement of said continuous length of blank film along a path, a section of which extends across the back face of said plate member, said movement including successive dwell periods including said exposure periods during which said longitudinal segments of said blank film are successively positioned generally along said path section;

(e) means for successively maintaining said segments in a



fixed position laterally with the back face of said plate member during at least portions of said dwell periods, including said exposure periods said position maintaining means consisting essentially of a layer of a preselected liquid substance which has an index of refraction at least approximately equal to the index of refraction of said plate member and which extends entirely across and contiguous with the confronting faces of each film segment and said plate member during the exposure period of a corresponding dwell period for maintaining each of said segments in said fixed lateral position during at least the exposure period in its corresponding dwell period, said liquid layer remaining static during said exposure periods of said dwell periods

(f) means for providing each of said layers of liquid substance; and

(g) means for directing said beam onto the front face of said image bearing film during each of said exposure periods for providing said multiple copies.

4,209,251

SINGLE SHOT MICROFICHE FILM DUPLICATOR

Henry G. Schroeder, and Henry F. Hasselvander, both of Metairie, La., assignors to Innovative Technology Inc., New Orleans, La.

Filed May 8, 1978, Ser. No. 903,602
Int. Cl.[2] G03B *27/10*
U.S. Cl. 355—110 **20 Claims**

1. An automatic film copier comprising:

a. receiving means for receiving a copy sheet of unexposed film and a master sheet of developed film containing an image to be reproduced, the sheets to be inserted together into said receiving means;

b. exposure means located adjacent to said receiving means for exposing said copy sheet through said master sheet to produce a developable image thereon;

c. separator means located adjacent to said exposure means

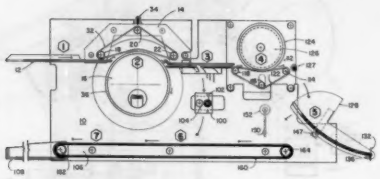
for separating said master sheet from said exposed copy sheet;

d. first conveyor means in association with said receiving means, said exposure means and said separator means for conveying together the master sheet and the copy sheet from said receiving means, across said exposure means, and to said separator means;

e. developing means located adjacent to said separator means for developing the separated exposed copy sheet;

f. transition means located adjacent to said developing means for handling the developed copy sheet after it is developed;

g. second conveyor means in association with said separator means, said developing means, and said transition means



for conveying the copy sheet from said separator means across said developing means to said transition means;

h. exit means including at least one exit tray for receiving the separated master sheet and the developed copy sheet;

i. third conveyor means including at least one conveyor in association with said exit means for conveying the developed copy sheet to said exit means and for conveying the master sheet to said exit means;

j. delivery means located adjacent to said separator means and said third conveyor means for delivering the separated master sheet to said third conveyor means; and

k. transfer means located adjacent to said transition means and said third conveyor means for transferring the developed copy sheet from said transition means to said third conveyor means.

4,209,252

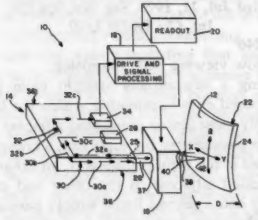
OPTICAL PROBE ASSEMBLY FOR DETECTING THE POSITION OF AN OBJECT SURFACE AND METHOD

Herve J. Arditty, 9 Chemin Du Bas Des Ormes, 78160 Marly Le Roi, France; Matt Lehmann, 212 San Hill Cir., Menlo Park, Calif. 94025; Jorlin E. Moon, 127 Seale Ave., Palo Alto, Calif. 94301, and Sherwyne R. Bakar, 20051 Edinburgh Dr., Saratoga, Calif. 95070

Filed Jul. 3, 1978, Ser. No. 921,447

Int. Cl.[2] G01C *3/08;* **G01B** *9/00;* **A61B** *3/10*

U.S. Cl. 356—4 **14 Claims**



1. An assembly for detecting the position of an object surface which is fixedly located relative to a known reference, said assembly comprising:

(a) means for producing a beam of light of predetermined cross-sectional configuration along its length;

(b) means for directing said beam along a predetermined beam path at least a segment of which extends along a straight-line adapted for alignment with and to impinge on said object surface;

(c) a focusing lens fixedly located within said path segment in front of said surface and having a focal point located on the axis of said path segment therebetween, whereby said beam passing through said lens converges to a point coincident with said focal point;

(d) scanning means for automatically causing said beam point to move in a predetermined way relative to said object surface and said reference for scanning said surface, said movement including a reciprocating movement along the axis of said path segment, said reciprocating movement being sufficient to cause said beam point to cross through said object surface, whereby said surface causes at least some of the light deforming said beam to be reflected back along a reflection path including at least a section of said beam path segment when said beam point is coincident with said surface, said scanning means producing scanning signals which together at any given instant are indicative of the position of said beam point relative to said reference at that instant, said scanning means including an arrangement for automatically moving said focusing lens and one section of said beam including said lens while maintaining said section in optical alignment with the rest of said beam so as to cause said beam point to move along one section of an imaginary sphere in a predetermined coordinate system relative to said object surface for detecting the position of a similarly shaped surface, said moving arrangement including

(i) first means for rotating said focusing lens and a segment of said beam section including said lens about a first predetermined rotation axis while maintaining said beam segment in optical alignment with the rest of the beam section, and

(ii) second means for rotating said beam segment and lens and the rest of said beam section about a second predetermined rotation axis while maintaining said beam segment in optical alignment with the rest of said beam section and while maintaining the entire beam section in optical alignment with the rest of said beam;

(e) means for detecting said reflected light and producing a detection signal in response thereto; and

(f) means connected with said detecting means and said scanning means and responsive to said signals for determining the position of said surface relative to such reference.

4,209,253

LASER RADAR TRACKING SYSTEM

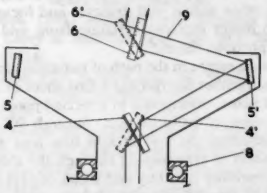
John L. Hughes, 34 Nungara Pl., Aranda, Canberra, Australia (2614)

Continuation of Ser. No. 737,912, Nov. 2, 1976. This application May 19, 1978, Ser. No. 907,603

Claims priority, application Australia, Nov. 3, 1975, PC3825

Int. Cl.[2] G01B *11/26;* **G01C** *3/08;* **G02B** *23/02;* **G05D** *25/00*

U.S. Cl. 356—152 **2 Claims**



1. A laser radar system with a common transmitter/receiver optical path consisting of an upper and lower section, the lower section being fixed and containing a laser beam generator and optical signal detector system with a beam splitter/reflector to combine or separate their respective beam paths and

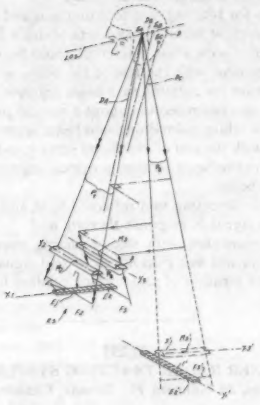
to direct the outgoing optical beam path into the upper section, said upper section being fully balanced to rotate about the vertical axis through an angle of approximately 360° with respect to the lower fixed section, and said upper section containing three movable reflectors at different heights to guide the beam path, a first one of said reflectors acting as a trackable, transmitter/receiver aperture, a second one of said reflectors being positioned off the vertical axis, and a third one of said reflectors being positioned lower than said first and second reflectors, and there is provided a fourth reflector positioned off the vertical axis and in line with and in the same plane as said second reflector but on the opposite side of the aperture reflector, which can be used in the optical path when tracking through zenith by flipping said aperture reflector and the third reflector through 180° from the positions they occupied prior to tracking through zenith, thus providing a continuous track without having to rotate the upper section of the laser radar system through an angle of 180°.

4,209,254

SYSTEM FOR MONITORING THE MOVEMENTS OF ONE OR MORE POINT SOURCES OF LUMINOUS RADIATION

Jean-Claude Reymond, and Jean-Luc Hidalgo, Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 1, 1979, Ser. No. 8,765
Claims priority, application France, Feb. 3, 1978, 78 03099
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **12 Claims**



1. In a system for monitoring the movement of a virtual point source of luminous radiation relative to a detection site, the combination with said source of a radiation sensor at said detection site comprising:

an elongate radiation detector;

a first and a second cylindrical lens member disposed parallel to each other across said detector and focused upon the latter to direct incident radiation from said source onto limited portions thereof;

beam-rotating means in the path of radiation incident on said first lens member for turning a first sheet of rays incident in a first plane, orthogonal to a second plane containing a second sheet of incident rays, through 90° into a third plane including the axis of said first lens member, said second sheet of rays passing through the axis of said second lens member whereby said sheets of rays intersect said detector at respective points defining with said axes the positions of said first and second planes;

output circuitry coupled to said detector for ascertaining its points of intersection with said sheets of rays; and

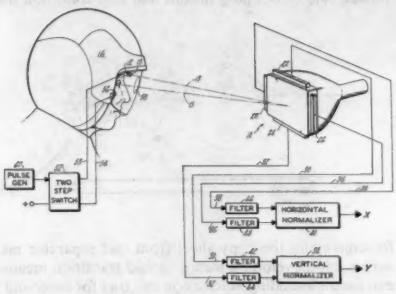
processing means connected to said output circuitry for determining from the locations of said points of intersection the direction of said source with respect to said detector.

4,209,255

SINGLE SOURCE AIMING POINT LOCATOR

Hans A. Heynau, Norwalk, and Peter E. Raber, Milford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1979, Ser. No. 25,648
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **11 Claims**



1. Aiming point locator for identifying the point on a plane which is viewed by a wearer, comprising:

emitter means positionable on the head of a wearer for selectively directing a beam of electromagnetic energy along a first axis toward a plane;

optical means located adjacent said emitter means through which said beam of electromagnetic energy passes for modifying said beam to create a tapered energy pattern;

sighting means positionable on the head of said wearer for creating a visible image along a second axis, said second axis intersecting said first axis, to identify the intersection of said first axis with said plane; and

photoresponsive means for receiving said tapered beam of electromagnetic energy from said emitter means and for providing an electrical output signal which is related to the location of the point in said plane viewed by said wearer.

4,209,256

LIQUID FLOW VIEWING CELL AND METHOD FOR ANALYZING LIQUID STREAM

Albert A. Faulkner, Conshohocken, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Jul. 21, 1978, Ser. No. 926,750
Int. Cl.² G01N *1/10*
U.S. Cl. 356—246 **6 Claims**

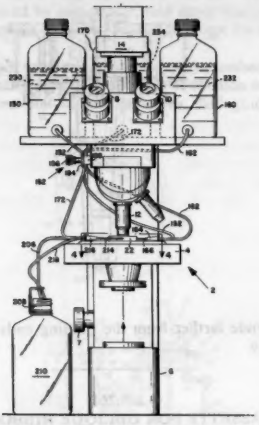
1. A liquid flow viewing cell comprising:

a body having a substantially straight main passageway having opposed ends terminating within the body, a first liquid supply passageway connected adjacent to one end of the main passageway for supplying a column of liquid to be viewed in the main passageway, an exhaust passageway connected adjacent to the other end of the main passageway and a second liquid supply passageway connected to the main passageway at a point between the connections of the supply and exhaust passageways to the main passageway for supplying a column of liquid around the first column of liquid,

said body being transparent opposite the ends of the main passageway,

a system for moving liquid through each of the supply pas-

sageways and thence through the main passageway and the exhaust passageway, and



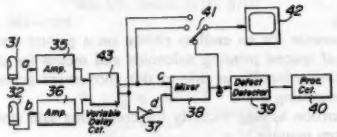
a light substantially aligned with the main passageway and directed at the one end of the main passageway.

4,209,257

APPARATUS FOR DETECTING DEFECTS IN PATTERNS

Yasushi Uchiyama, Yokohama, and Daikichi Awamura, Kawasaki, both of Japan, assignors to Nippon Jidoseigyo Ltd., Kawasaki, Japan

Filed Jul. 5, 1978, Ser. No. 922,216
Claims priority, application Japan, Jul. 15, 1977, 52-84056
Int. Cl.² G01B 11/00
U.S. Cl. 356—394 **22 Claims**



1. An apparatus for detecting defects in patterns, particularly defects in chip patterns of photomasks for use in manufacturing semiconductor integrated circuits comprising

optically scanning means including first and second lens systems each of which projects a scanning light spot onto a respective one of two identical portions of two patterns to be compared with each other and for scanning simultaneously said portions in a two dimensional scanning mode to produce first and second picture signals corresponding to said two identical pattern portions, respectively;

delay means for delaying at least one of said first and second picture signals for a delay time which is varied as a function of a position on the two dimensional scanning plane so as to decrease a relative deviation of the picture signals mainly due to a difference in distortion and/or magnification between the first and second lens systems; and

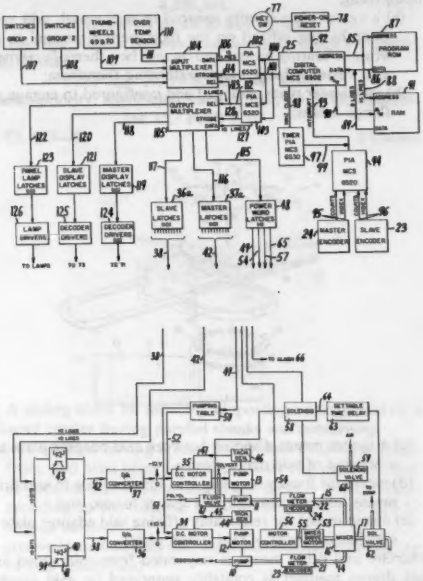
means for receiving output picture signals from said delay means and forming a difference between these picture signals to produce a defect signal.

4,209,258

AUTOMATIC CONTINUOUS MIXER APPARATUS

W. Peter Oakes, 296 Maple St., Islip, N.Y. 11751

Filed Feb. 14, 1978, Ser. No. 877,679
Int. Cl.² B01F 15/04
U.S. Cl. 366—138 **25 Claims**



1. In fluid control apparatus including a conduit for a fluid and pumping means for impelling fluid along said conduit, the improvement comprising means for generating a sequence of pulses having a repetition rate accurately representative of the actual instantaneous flow rate in said conduit, sampling means for periodically counting the number of said pulses generated per unit of time, means for generating a first signal that is a binary digital representation of the number of counts counted by said sampling means, manually settable means for generating a reference signal value representative of a selected flow rate, means generating a second signal that is a binary digital representation of the setting of said settable means and means jointly responsive to said first and second signals providing a difference signal for controlling said pumping means to maintain a predetermined relation between said pulse repetition rate and said reference value.

4,209,259

MAGNETIC MIXER

Robert L. Rains, 11542 Andasol Ave., Granada Hills, Calif. 91344, and Larry R. Rathbun, Star Rte. Box 21 BBB, Hollister, Mo. 65616

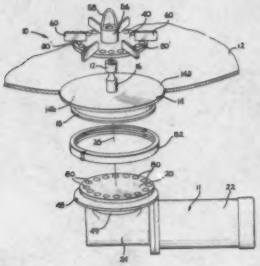
Filed Nov. 1, 1978, Ser. No. 956,679
Int. Cl.² B01F 7/16
U.S. Cl. 366—273 **12 Claims**

8. In an apparatus for agitating a fluid contained in a vessel comprising (i) a driver member rotatably coupled to a drive means and having affixed therein a first plurality of permanent magnetic members; (ii) a driven member rotatably mounted within said vessel coaxially with the axis of rotation of said driver member, and having affixed therein a second plurality of permanent magnetic members; (iii) said magnetic members each being made of material characterized by high energy products; (iv) said first and second pluralities of magnetic members being disposed in corresponding symmetrical arrays

within said driver and driven members respectively, the magnetic poling of said magnetic members alternating between magnetic north and magnetic south poles; and (v) impeller means fixedly secured to said driven member, improved means for supporting said drive means and driven member external to said vessel and said driven member internal to said vessel, comprising:

(a) a vessel plate fixedly secured in said vessel, said vessel plate having affixed on the face thereof internal to said vessel a bearing means, and on said face thereof external to said vessel a flange means extending therefrom;

(b) an adapter plate arranged and configured to engage said flange means;



(c) a spacer means disposed between said adapter plate and a housing of said drive means;

(d) means for fixedly securing said adapter plate to said drive means housing through said spacer means; and

(e) clamp means for removably affixing said adapter plate to said flange means of said vessel plate;

whereby said drive means is suspended from said vessel and said driven member is rotatably supported by said bearing means, and torque from said drive means is transmitted from said driver member to said driven member by the magnetic forces existing between said first and second pluralities of magnetic members, causing said driven member to rotate in unison with the rotation of said driver member, and said impeller means to agitate said fluid.

4,209,260

WIRE MATRIX PRINT HEAD HAVING REVERSIBLE WIRE DRIVE ARMATURES TO ALLOW WIRE WEAR COMPENSATION

Friedrich Jung, Erlangen, Fed. Rep. of Germany, assignor to Triumph Werke Nurnberg, A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,224

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800218

Int. Cl.[2] B41J *3/12*

U.S. Cl. 400—53 **1 Claim**

1. In a wire matrix printing head comprising

a guide assembly for retaining a plurality of wires each of which has a driving end and a printing end,

electromagnets including armatures positioned to drive said driving ends of said wires,

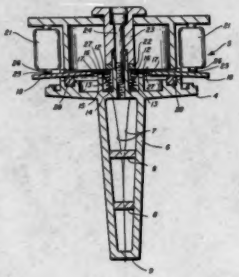
adjusting means for controlling the gap between armatures and electomagnet pole pieces, and

spring means for urging the drive ends of said wires and said armatures to a rest position,

the improvement comprising a step on one side of said armatures presenting a face to the driving ends of said wires, and a disc having a thickness equivalent to the depth of said step,

said return springs acting between said disc and the driving ends of said wires,

said armatures being reversible to present the opposite faces thereof to the driving ends of said wires so that after removal of said disc said gap may be readjusted to its original setting thereby to cause wires shortened by wear



to protrude farther from the printing ends of said guide assembly.

4,209,261

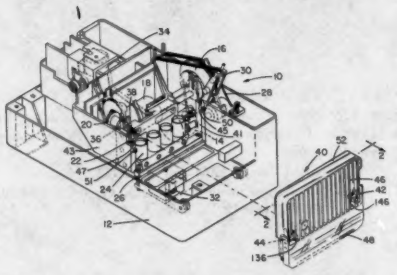
RIBBON CASSETTE FOR OBLIQUE RIBBON FEEDING

David W. Bell, Ithaca, and Edward W. Sinram, Cortland, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 12, 1977, Ser. No. 859,401

Int. Cl.[2] B41J *33/10*

U.S. Cl. 400—196.1 **8 Claims**



1. A cassette for an endless ribbon on a printer having a plurality of spaced printing solenoids and means for driving said printing solenoids in side to side movement across said paper, comprising a

body portion having a cavity for containing said ribbon in random manner,

roller means positioned at an oblique angle relative to said body portion and to a line of printing and connected with said means for driving said printing solenoids for continuously driving said ribbon into and out of said cavity and along a path at said angle relative to the line of printing,

means for containing said ribbon in said angular path relative to said line of printing, and

means removably connecting said cassette to said printer for permitting printing by said printing solenoids along said line of printing independent of the position of the cassette on said printer.

4,209,262

PRINT WHEEL LOADING APPARATUS

James G. Savage, Newark, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1978, Ser. No. 960,988

Int. Cl.[2] B41J *1/30*

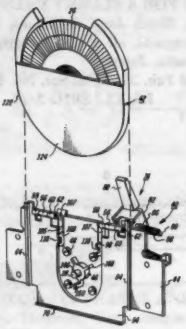
U.S. Cl. 400—144.2 **3 Claims**

1. For use in an an impact printer having a movable carriage,

a motor supported by said carriage and including a rotatable shaft, and a drive coupling member affixed to an end of said shaft, apparatus for loading a print wheel contained in a cartridge onto said drive coupling member in order for said print wheel to be rotated by said motor, said apparatus comprising:

a support member mounted to said carriage for movement therewith;

a guide member mounted to said support member for movement generally parallel to the axis of rotation of said shaft between first and second positions, said guide member



being adapted when in its first position to engage and guide the movement of a printwheel cartridge along said guide member in a direction generally transverse to the axis of rotation of said shaft; and

means coupled to said support member and active upon movement of a print wheel cartridge along said guide member for automatically moving said guide member from its first position to its second position to thereby load a print wheel contained in said cartridge onto said drive coupling member.

4,209,263

STRUCTURE FOR REDUCED INK EVAPORATION

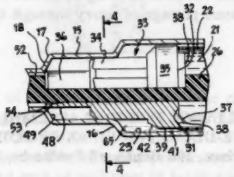
Michel Droubay, Chamonix, France, assignor to Waterman S.A., Paris, France

Filed Jan. 25, 1978, Ser. No. 872,103

Claims priority, application France, Jun. 20, 1977, 77 18833

Int. Cl.[2] B43K *5/00, 8/02*

U.S. Cl. 401—198 **4 Claims**



1. A writing unit comprising: a case; a writing point forwardly protruding from said case and lodged in said case; an ink capillary accumulating element in said case and having a forward end; an ink capillary feed member having a forward portion in contact with said writing point and a rearward portion in contact with said forward end of said ink capillary accumulating element, said feed member positioned within said case such that a gap exists between the outer surface of said feed member and the inner surface of said case; a cap member sealingly bearing onto the forward end of said ink accumulating element; a through hole formed in said cap member, said rearward portion of said feed member fitted into said through hole, and said through hole widening forwardly in said cap member to allow easy insertion of said feed member, said cap member forming a zone of sealing contact with the inner surface of said case; and a venting aperture formed in said case rearwardly of said zone of sealing contact between said cap member and the inner surface of said case.

4,209,264

SLIDING BLOCK SUPPORT

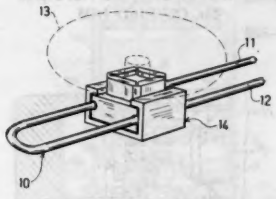
Arne Hellberg, Grabo, Sweden, assignor to Hellberg Protection AB, Sweden

Filed Apr. 17, 1979, Ser. No. 30,821

Claims priority, application Sweden, May 29, 1978, 7806104

Int. Cl.[2] F16B *2/02*

U.S. Cl. 403—80 **2 Claims**



1. A sliding block for movably supporting a component on a U-shaped carrier having parallel shanks and comprising

a base member having a head and a shaft projecting therefrom, said head being including a least two parallel, laterally spaced side walls arranged at a distance mainly corresponding to the distance between the shanks of said U-shaped carrier,

a groove in each of said side walls frictionally receiving one of said shanks, and

a channel-shaped cover which grippingly encloses said head and said side walls whereby said block is frictionally supported by said carrier.

4,209,265

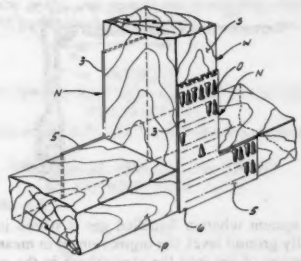
CONNECTOR SYSTEM FOR WOOD STRUCTURES

Walter G. Moehlenpah, 9906 Old Wardon Rd., St. Louis, Mo. 63124

Filed Jul. 17, 1978, Ser. No. 925,480

Int. Cl.[2] F16B *1/00, 15/00*

U.S. Cl. 403—230 **13 Claims**



1. A structural joint comprising first and second wood members, the second member having one end engaging one side of the first member and extending generally perpendicularly to the first member, and a pair of substantially congruent, L-shaped connectors of commercial sheet steel or the like, each of said connectors having a first leg and a second leg, said legs each having teeth struck therefrom with the teeth extending generally perpendicularly to the connector for being driven

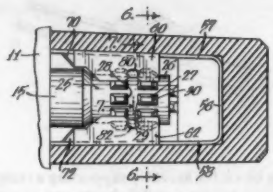
into respective wood members, said pair of connectors being driven into said wood members on opposite sides thereof at the intersection of the wood members with the second leg of each of said connectors extending in opposite directions on opposite sides of said first wood member and with the first legs of said connectors facing one another on opposite sides of said second wood member, all of the teeth of the first legs of said connectors being embedded in said second wood member and all of the teeth of said second connector legs being embedded in said first wood member.

4,209,266

SNAP-ON HANDLE STRUCTURE

Jack L. Bowen, and Gary F. Paulson, both of Waseca, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Mar. 29, 1979, Ser. No. 24,910
Int. Cl.[2] F16D *1/06*
U.S. Cl. 403—329 **9 Claims**



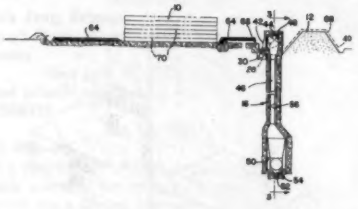
1. A snap-on handle structure including a handle mountable on a splined operating shaft having a series of teeth, said handle having an internal recess to receive said shaft and having spaced splined sections in said recess to interfit with the splined operating shaft, a generally U-shaped spring member in said recess having a pair of legs extending along the length of said recess and interfitted with the handle at locations between said spline sections, and each of said legs having a pair of spaced-apart inwardly-turned elongate flanges to fit between spline teeth on said operating shaft.

4,209,267

EMERGENCY SAFETY SYSTEM

John P. Gnaedinger, 160 Sheridan, Kenilworth, Ill. 60043

Filed Sep. 18, 1978, Ser. No. 943,155
Int. Cl.[2] B65G *5/00*
U.S. Cl. 405—53 **20 Claims**



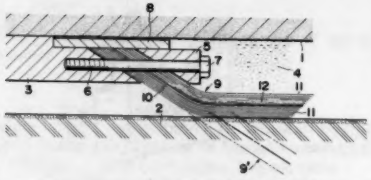
1. In a system wherein liquefied gas is stored in a tank at substantially ground level, the improvement in means for minimizing passage of gas into the atmosphere in the event liquefied gas is discharged from a tank onto the ground, the improved system comprising a retaining dike extending around the tank and spaced outwardly therefrom, a liquefied gas collection shaft defining an inlet and positioned in the area between the dike and the tank, said collection shaft extending a substantial distance below ground level, liquefied gas drainage means for directing liquefied gas over the surface of the ground within the confines of said dike and outside said tank for directing liquefied gas to said collection shaft, and an underground liquefied gas collection chamber communicating with said collection shaft, said collection chamber extending a substantial distance outwardly of said collection shaft and being dimensioned to at least temporarily receive an amount of liquefied gas discharged from the tank commensurate with the amount stored in the tank.

4,209,268

TAIL PACKING FOR A SLURRY PRESSURIZED SHIELD

Toshio Fujiwara, Shiki; Junji Sakimoto, Kiyose, and Hisaya Yoshioka, Kawaguchi, all of Japan, assignors to Ohbayashi-Gumi, Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,390
Int. Cl.[2] E01G *5/16*
U.S. Cl. 405—147 **12 Claims**



1. A tail packing for sealing a gap between a segment liner and a tail plate of a slurry pressurized shield tunnel machine, said tail packing comprising:

an annulus formed of a plurality of juxtaposed layers of strings attachable to a tail plate of a shield tunnel machine in such manner that the filaments extend inwardly from the tail plate at an angle skew to the axis of the tail plate and at least one of the layers engages and lays against an outer periphery of a segment liner encompassed by the tail plate; and

a filter element of toroidal configuration positioned within said juxtaposed layers of strings and extending inwardly towards the segment liner from the attachment of the strings to the tail plate, said at least one layer being positioned between the filter element and the segment liner, the arrangement of the filter element being such that, when slurry initially passes through the tail packing, a mud-cake is formed on said filter element to seal a gap between the tail plate and segment liner thereby preventing continued passage of slurry through the tail packing.

4,209,269

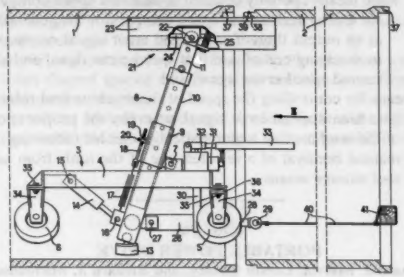
APPLIANCE FOR THE ASSEMBLY OF LARGE-DIAMETER PIPES BY JOINTING

Louis G. Martinez, 196 Boulevard Faidherbe, 59400 Cambrai, France

Filed Jun. 22, 1978, Ser. No. 918,193
Claims priority, application France, Jun. 22, 1977, 77 19121
Int. Cl.[2] F16L *1/00*
U.S. Cl. 405—154 **14 Claims**

1. An apparatus for assembling jointed large-diameter pipes, comprising, a carriage which is movable inside a stationary said pipe laid in position, locking means on said carriage for locking said carriage within and near the free end of the stationary pipe, said locking means being engageable with the interior of the stationary pipe to prevent axial movement of the carriage, levelling and centering means supported by the locking means and located to project axially from an upper part of the free end of the stationary pipe to level and center the next pipe to be laid, and hauling means for pulling another pipe

toward the apparatus and into engagement with the stationary pipe, means connecting said hauling means to said locking



means to bias said locking means against the interior of the stationary pipe in response to operation of said hauling means.

4,209,270

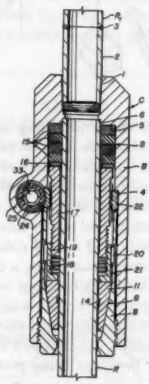
PIPE CONNECTOR APPARATUS AND METHOD

Lloyd E. Billingsley, Houston, Tex., assignor to HydroTech International, Inc., Houston, Tex.

Division of Ser. No. 788,159, Apr. 18, 1977, Pat. No. 4,142,739. This application Dec. 18, 1978, Ser. No. 970,791

Int. Cl.[2] F16L *21/08*

U.S. Cl. 405—195 **3 Claims**



1. A method of repairing a damaged pipe riser extending upwardly through a body of water to a well platform or the like comprising the steps of:

removing a first section of said pipe riser by cutting below the damaged area of said riser to leave a second section therebelow;

providing a third section of pipe, to replace said first section, with a connector attached to the lower end thereof, said connector being provided with gripping means, seal means and axially extendable and retractable sleeve means therebetween;

lowering said connector on said third section of pipe so as to receive the upwardly projecting end of said second riser section until lowering is arrested by stop means within said connector;

extending said sleeve means to simultaneously apply oppositely directed axial forces for contracting said gripping means to grippingly engage said second section and for compressing said seal means to sealingly engage said second section so as to provide fluidtight communication between said second and third riser sections.

4,209,271

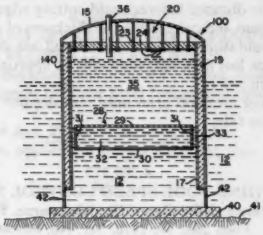
STORAGE TANK WITH LIQUID INSULATOR FOR STORING CRYOGENIC FLUIDS USING WATER DISPLACEMENT

John S. McCabe, Naperville; Donald C. Stafford, Hinsdale, and Royce J. Laverman, South Holland, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 10, 1978, Ser. No. 932,444

Int. Cl.[2] E02D *27/38*; F17C *3/04*

U.S. Cl. 405—210 **6 Claims**



1. In combination:

a liquefied gas storage tank having insulated vertical walls and an insulated top,

said tank being located in and surrounded by a body of water with the exterior water level below the top of the tank walls,

the tank interior space containing a layer of water, which extends completely across the tank inner width, in communication with the body of water so that water can be supplied to and be removed from the tank,

an insulating float floating on the water layer in the tank,

said float being a shell having a top, bottom and vertical cylindrical side wall spaced inwardly from the inner surface of the tank wall to provide a rim space, and said float extending over the water layer except at the rim space,

an insulating liquid in the rim space which has a specific gravity less than water and higher than a liquefied gas floating on the insulating layer, and

said insulating liquid being essentially immiscible with water, in direct contact with the liquefied gas and the water along the entire rim space, and remaining liquid at the liquefied gas storage temperature.

4,209,272

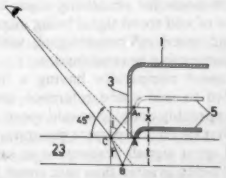
APPARATUS AND METHOD OF FORMING HOLES IN PLATE GLASS

Masaaki Miyanaga, 5-15-109 Matsuhamacho, Ashiya, Hyogo, Japan

Filed Jun. 26, 1978, Ser. No. 919,407

Int. Cl.[2] B23B *49/00*, *51/04*

U.S. Cl. 408—1 R **1 Claim**



1. A method of sawing a hole in plate glass using glass cut-

ting apparatus including a circular core drill and stopper means mounted radially within said core drill, said drill having cutting teeth on a forward cutting edge and at least one axial slot formed therein, and the stopper means being movable axially of said drill, said method comprising the steps of:

positioning said apparatus with the drill and the stopper means against one side of said plate glass, viewing from a distance of more than approximately 30 cm. and from an angle of approximately 45° from said axis the reflection of said stopper means from the other side of said glass and noting on said one side the location where said reflection passes through said one side;

moving said stopper means axially away from said one side until the reflection of said stopper means from said one side coincides with said location;

noting the distance between said cutting edge and said stopper means and calculating the thickness of said plate glass;

moving said stopper means toward said one side to make said distance less than said thickness by approximately 0.05 to 1.0 mm;

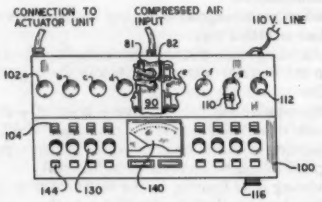
and cutting into said glass until said stopper means engages said one side.

4,209,273

MACHINE TOOL SPEED CONTROL SYSTEM

Peter E. Lehnen, 2084 Cheryl Ct., Melbourne, Fla. 32935

Filed Jan. 16, 1978, Ser. No. 869,468
Int. Cl.[2] B23B *39/00, 47/02*
U.S. Cl. 408—9 **4 Claims**



1. A speed control system for being coupled to a variable speed machine tool in order to control the speed of the machine tool responsive to the manual selection of one of a plurality of interchangeable quick-change tools, said control apparatus comprising in combination:

tool storage means including a plurality of tool receptacles each for removably storing therein one of the tools;

a plurality of tool sensors, each paired with and located adjacent to one of said tool receptacles, for generating a use signal responsive to the manual removal of the paired one of the tools from said tool receptacle;

speed reference means for generating a plurality of speed reference signals representative of the proper speed for each of the machine tools;

speed sensor means coupled to the machine tool for generating a speed signal representative of the speed of the machine tool, with said speed sensor means further including interval generator means for receiving said speed signal and responsive thereto generating a dynamic limit speed signal, whereby an operational limit window is defined between said speed signal and said limit speed signal;

comparator means for generating a speed error signal representative of said speed signal being incrementally different from said speed reference signal, with said comparator means comprising in combination;

a first speed comparator having a first input operably coupled to said speed reference means and a second input operably coupled to said speed sensor means, with said first speed comparator generating a first one of said speed error signals responsive to said speed reference signal being greater than said speed limit signal;

a second speed comparator having a first input operably coupled to said interval generator means, with said speed second comparator generating a second one of said speed error signals responsive to said speed reference signal being less than said speed limit signal;

logic means operably coupled to said first speed comparator and to said second speed comparator for generating at an output thereof said speed error signal responsive to receiving one of said first speed error signal and said second speed error signal; and

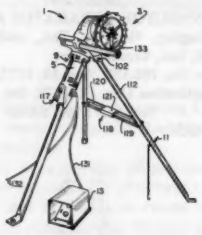
means for controlling the speed of the machine tool responsive to said speed error signal, whereby the proper speed of the machine tool is automatically selected following the manual removal of a selected one of the tools from said tool storage means.

4,209,274

PORTABLE POWER DRIVE

Richard J. Martin, Lorain County, and Richard J. Mittendorf, Erie County, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 12, 1978, Ser. No. 923,796
Int. Cl.[2] B23G *1/24, 1/52*
U.S. Cl. 408—126 **11 Claims**



6. A portable power drive including a motor having an output shaft rotatable about an axis of rotation; a rotatable member rotatable about an axis of rotation generally perpendicular to said axis of said output shaft; gearing for connecting said motor to said rotatable member; an elongate motor housing surrounding said motor, said motor housing having a long axis generally coaxial with said axis of rotation of said motor and having upper and lower axial ends; a casing surrounding said rotatable member, said axially upper end of said elongate motor housing being attached to said casing; and three legs forming a tripod support for said power drive, one of said legs being attached to said axially lower end of said elongate motor housing, and said other two legs being pivotably mounted to said casing.

4,209,275

TWIST DRILL

Joo B. Kim, 1704 - 18th Ave., Pasco, Wash. 99301

Filed Oct. 30, 1978, Ser. No. 955,650
Int. Cl.[2] B23B *51/02*
U.S. Cl. 408—211 **1 Claim**

1. A twist drill, comprising:

an elongated round bar formed about a longitudinal central axis;

helical flutes formed within said bar and generated about said central axis;

lands formed between said flutes;

a point at one end of said bar;

a shank end at a remaining end of said bar;

wherein said point includes:

cutting shoulders formed along said lands on the periphery of said bar;

cutting lips formed along continuous smooth curved lines

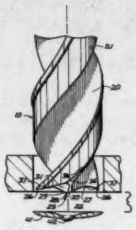
leading transversely toward said central axis directly from said cutting shoulders;

a central chisel point at the inward ends of said cutting lips and centered on said central axis;

wherein said cutting shoulders are spaced axially toward said shank end from said chisel point;

wherein said cutting lips are longitudinally concave with bases thereof spaced axially toward said shank end from said cutting shoulders;

heel surfaces formed at said point, leading from said cutting lips about said axis to trailing edges defined by said flutes;



rearward shoulders along said trailing edges that are axially spaced toward said shank end from the bases of said cutting lips, inwardly to said chisel point; and

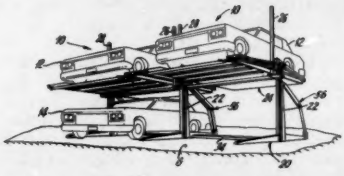
chisel edge forming surfaces adjacent to said heel surfaces and angularly offset toward the shank end therefrom, leading inwardly from the lands to said chisel point, thereby forming two straight chisel edges at said chisel point diverging from the central axis and joining the concave cutting lips at points equally spaced from the central axis.

4,209,276

VEHICLE PARKING APPARATUS

Arnold M. Rosen, 4 Horizon Rd., Fort Lee, N.J. 07024, assignor to Arnold M. Rosen, Bergenfield, N.J.

Filed Jun. 5, 1978, Ser. No. 912,742
Int. Cl.[2] B66F 7/04
U.S. Cl. 414—240 **13 Claims**



1. Vehicle parking apparatus comprising:

a base frame including two elongated, spaced stanchions, each stanchion being of unitary construction and having a generally vertically extending portion rigidly secured to the base frame at the lower end thereof, and an angled upper portion, each stanchion having elongated guide means extending along the length thereof;

a platform mounted on said base frame and dimensioned to receive a vehicle, said platform including slide means on opposite sides thereof respectfully engaged with the elongated guide means of the spaced stanchions for substantially free reciprocation of said platform along the length of the stanchions, each stanchion being generally H-shaped in cross-section, and including inwardly directed flanges disposed at the free ends thereof for defining channels forming the elongated guide means for receiving said slide means, and wherein said slide means comprises upper and lower vertically spaced rollers respectfully secured to the platform and adapted to freely reciprocate in said channels; and

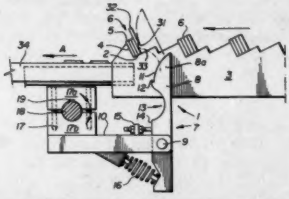
reversible elevating means supported by said stanchions and connected to the platform for elevating the platform with a first vehicle thereon from an initial, generally horizontal position to an elevated position wherein said upper rollers are in the angled upper portions of the stanchions while the lower rollers are in the lower, vertically extending portions of the stanchions such that said platform is inclined with respect to the horizontal at an angle substantially corresponding to the angled upper portions of the stanchions, whereby a second vehicle can be parked beneath the elevated platform.

4,209,277

METHOD AND APPARATUS FOR SEPARATING ELONGATE ELEMENTS

Joseph Micucci, Binbrook, and Rudolf F. Kuras, Dundas, both of Canada, assignors to Slater Steel Industries Limited, Hamilton, Canada

Filed Jan. 27, 1978, Ser. No. 872,952
Claims priority, application United Kingdom, Jan. 31, 1977, 03909/77
Int. Cl.[2] B65G 37/00
U.S. Cl. 414—330 **15 Claims**



1. Apparatus for separating elongate metal bar elements one at a time from a batch of said elements supported on a walking beam bed, said apparatus comprising a batch receiver means having an inclined support face to support the leading element of said batch so that abutting faces of said elements are parallel to said support face, and element ejector means including at least one finger engageable with the trailing element of said batch furthest from said support face to lift said trailing element in an upwardly forward direction to separate said element from said batch and cam surface means on said finger engageable with said trailing element and operable to move said finger progressively away from said support face to permit engagement with successive trailing elements.

4,209,278

CHASSIS HAVING ARTICULATED FRAME

Bob D. Cooper; Richard L. Krivy, and Herbert J. Horinek, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 879,535, Feb. 21, 1978, Pat. No. 4,159,180.
This application Dec. 22, 1978, Ser. No. 972,638
Int. Cl.[2] B60P 1/16, 1/32
U.S. Cl. 414—477 **5 Claims**

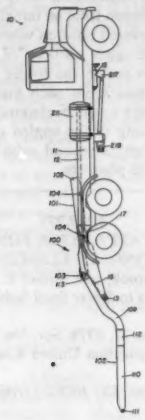
1. A self-propelled land vehicle for use in well servicing operations comprising:

a self-propelled horizontally fixed chassis having an articulated frame secured thereon, said articulated frame including:

a first translatable portion; and

a second translatable, rotatable portion rotatably secured to the first translatable portion to allow downward rotational movement of the second translatable, rotatable portion with respect to the first translatable portion whereby movement of said articulated frame with respect to said chassis between a first retracted position and a

second extended position causes substantially translational movement of the first translatable portion with respect to said chassis and causes translational and rotational movement of the second translatable, rotatable portion with respect to said chassis where the translatable, rotatable portion translates and rotates downwardly from a first position to a second position.

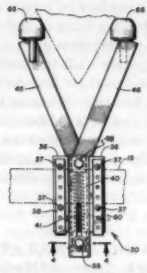


4,209,279

BOAT TRAILER LOADING GUIDE

Leon J. Aasen, 4940 Northern Rd., Mound, Minn. 55364

Filed Sep. 18, 1978, Ser. No. 943,320
Int. Cl.[2] B60P *1/52*
U.S. Cl. 414—534 **9 Claims**



1. A boat trailer loading guide for a boat trailer having a transverse beam at its rear end comprising:

(a) a pair of upright crossed guide levers pivotally interconnected at their point of crossing and each having lower end portions extending downwardly therefrom in spaced relation and having laterally spaced upper portions;

(b) a pair of links each of which is pivotally connected to the lower end portion of its respective guide lever and said pair being pivotally interconnected at a point along their length remote from their points of connection to their respective guide levers;

(c) means connected with said links for constraining said point of pivotal interconnection for vertical movement;

(d) bias means engaging said links adjacent their point of pivotal interconnection and biasing the upper portions of said guide levers toward each other through said links;

(e) a pair of boat engaging and guiding members, one each of which is carried by the upper end portion of one of said guide levers; and

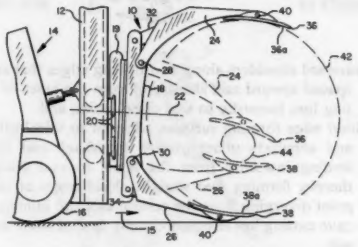
(f) beam-engaging means connected to said guide levers and pivotally supporting the same at their point of crossing and constructed and arranged to engage such a rear beam of such a boat trailer to thereby pivotally mount said guide levers thereupon in transverse upright boat-receiving and guiding relation.

4,209,280

LIFT TRUCK LOAD CLAMP HAVING NONRESILIENT CONTACT PAD SURFACES TEXTURED FOR DIRECTIONALLY VARIABLE RESISTANCE TO SLIPPAGE

Edward D. Bittner, Hillsboro, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 832,340, Sep. 12, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,195
Int. Cl.[2] B66F *9/18*
U.S. Cl. 414—620 **8 Claims**



1. In a lift truck adapted to move longitudinally in a direction of travel having a lifting apparatus at its forward end for raising and lowering a load vertically, a load-handling attachment mounted on said lifting apparatus comprising:

(a) a frame mounted on a portion of said lifting apparatus so as to be selectively raised and lowered vertically by said lifting apparatus;

(b) a pair of forwardly-projecting, selectively openable and closeable opposing clamp arms mounted upon said frame;

(c) power means mounted upon said frame for selectively opening and closing said clamp arms;

(d) a pair of contact pads, each connected to a forward end of a respective one of said pair of clamp arms, said contact pads having opposing load-engaging nonresilient surfaces;

(e) means defining an array of elongate, generally parallel, spaced grooves formed in each of said load-engaging nonresilient surfaces separated by elongate nonresilient lands between said grooves, said grooves and lands being directionally oriented so as to extend along their lengths in a direction generally longitudinal of said lift truck in the direction of travel thereof for sliding longitudinally with respect to a load as said lift truck moves forwardly along said direction of travel to engage said load.

4,209,281

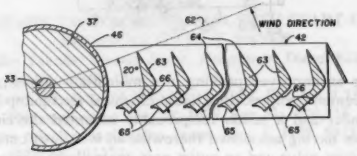
WIND DRIVEN PRIME MOVER

William A. Edmunds, 2975 Pheasant Run Dr., Jackson, Mich. 49202

Filed Jul. 20, 1978, Ser. No. 926,329
Int. Cl.[2] F03D *3/06*
U.S. Cl. 416—197 A **7 Claims**

1. In a fluid driven prime mover, a vertical axis rotary working shaft and support means for said shaft, a driving rotor coupled to said working shaft and having plural circumferentially spaced rotor arms disposed in substantially vertical planes, said arms radiating from said shaft, and banks of fixed

louvers on said arms of the rotor and being rigidly connected with the arms, the fixed louvers of each rotor arm being disposed in a common plane and extending substantially entirely across the arm in one direction and being parallel to each other in such direction, and each louver in the bank of louvers on each rotor arm comprising an approximately L-shaped louver body having an intermediate elbow portion, a leading tapered portion extending from the elbow portion and terminating in a substantially sharp frontal edge positioned along the flow path of a fluid medium by means of which the prime mover is being driven, a trailing portion extending from the elbow portion at an oblique angle to the flow path of said fluid medium and having opposite side faces which diverge away from the elbow



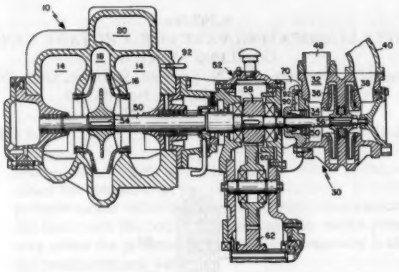
portion so that the trailing portion increases in thickness rearwardly, each trailing portion being provided at its rear end with a concave impulse face positioned to be impinged on by a flowing fluid medium, and the opposing side faces of all of the divergent trailing portions of said louver bodies being rearwardly convergent to define between adjacent louver bodies a plurality of equal width rearwardly tapering restricted venturi slots across each rotor arm, said slots being coextensive lengthwise with said louver bodies and said venturi slots disposed immediately forwardly of said concave impulse faces and somewhat rearwardly of the elbow portions, the axes of said venturi slots being oblique in relation to the flow path of said fluid medium and being generally normal to said concave impulse faces.

4,209,282

PUMP ASSEMBLY

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed May 3, 1978, Ser. No. 902,350
Int. Cl.[2] F01D *11/04*; A62C *25/00*
U.S. Cl. 417—251 **7 Claims**



1. A pump assembly for use in fire fighting service comprising:

a main pump having an impeller means, a suction to the impeller means, and a discharge from the impeller means,

means for connecting the discharge of said main pump to a first high flow rate fire fighting application,

a booster pump having an impeller means, an inlet to the booster pump impeller means, and a discharge from the booster pump impeller means,

means for connecting the discharge of said booster pump to a low flow high pressure second fire fighting application,

means for connecting the discharge from said main pump to the inlet of said booster pump,

drive means for said main pump and said booster pump including a common rotating pump shaft,

said main pump impeller means being mounted on one portion of said shaft so as to be driven thereby, and said booster pump impeller means being mounted on another portion of said shaft so as to be driven thereby, and

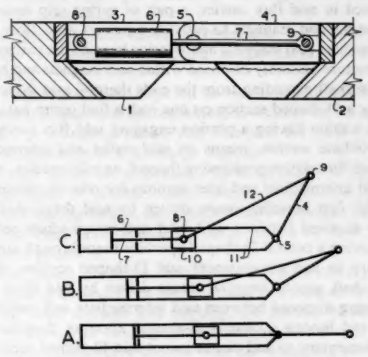
means defining an inlet chamber constructed and arranged to receive the flow of water delivered from the discharge of said main pump to the inlet of said booster pump, said inlet chamber surrounding said drive shaft adjacent to the inlet to said booster pump impeller means, the pressure of the water in said inlet chamber approximately that of the water delivered from said main pump discharge, means defining a seal chamber surrounding said shaft at a location adjacent said inlet chamber, means connecting said seal chamber to the inlet of said main pump so that the pressure in said seal chamber approximates that of the main pump inlet, means providing a minimal leakage flow from said inlet chamber to said seal chamber, and means providing a seal between said shaft and an external housing portion of said booster pump to prevent flow of water from said seal chamber to the exterior of said booster pump.

4,209,283

WAVE-TO-HYDRAULIC POWER CONVERTER

Fendall Marbury, 9010 Kensington Pkwy., Chevy Chase, Md. 20015

Filed Sep. 13, 1978, Ser. No. 942,128
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—332 **4 Claims**



1. A wave-to-hydraulic power converter, comprising:

two wave-engaging members connected by a hinge which leaves said members free to oscillate relative to each other about the axis of said hinge, wherein said members assume always the same relative position while at rest in the absence of waves,

a unit which by resisting changes to its length absorbs energy, with one end of said unit rigidly fixed to a first said wave-engaging member and the other end of said unit fixed to a crosshead slidably mounted in guides which are rigidly fixed to said first member,

a connecting rod with one end pivotally connected to said crosshead by a wrist pin and the other end pivotally connected to the second said wave-engaging member,

wherein the line of motion of said wrist pin, produced beyond the limits of said wrist pin's motion, substantially intersects said hinge axis, and

wherein the axis of said connecting rod, defined by the centers of said wrist pin and of said pivotal connection to said second wave-engaging member, lies substantially in the same plane with said line of motion of said wrist pin and with said hinge axis when said wave-engaging members are in said relative position which they assume when at rest in the absence of waves.

4,209,284

ELECTRIC MOTOR-DRIVEN TWO-STAGE FUEL PUMP

Robert L. Lochmann, and Bryce L. Stevens, both of Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 1, 1978, Ser. No. 938,947
Int. Cl.[2] F04B 17/00, 35/00; H02K 21/26
U.S. Cl. 417—366 1 Claim

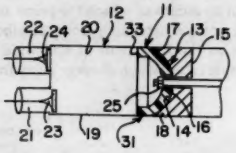
1. An electric motor-driven fuel pump for a fuel system for a motor vehicle comprising; an electric motor having a cylindrical flux carrier, a pair of segmented permanent magnets disposed in said flux carrier, a pair of spring clip means for separating said magnets to provide a pair of axial flow paths intermediate said magnets and interior to said flux carrier, and an armature assembly disposed within said magnets and having a drive shaft extending from the ends thereof, said drive shaft having a D-shaped section on one end; a fuel pump having an outlet section having a portion engaging said flux carrier, an intermediate section, means on said outlet and intermediate sections for relative positioning thereof, an inlet section, means on said intermediate and inlet sections for relative positioning thereof, first impeller means driven by said drive shaft and being disposed between said inlet and intermediate sections and having a central D-shaped aperture therethrough complementary to and circumjacent said D-shaped section of said drive shaft, second impeller means driven by said drive shaft and being disposed between said intermediate and outlet sections and having a central D-shaped aperture therethrough complementary to and circumjacent said D-shaped section of said drive shaft, and axial passage means in said inlet, intermediate and outlet sections for respectively admitting fuel to said first impeller means, for transferring fuel from said first impeller means to said second impeller means, and for delivering fuel from said outlet section to said axial flow paths intermediate said magnets; a fuel outlet housing means disposed partially in said flux carrier including bearing means for rotatably supporting one end of said drive shaft, and having fluid passage means in communication with said axial flow paths intermediate said magnets; fuel pump housing means secured to said inlet section and said fuel outlet housing means and enclosing said flux carrier, outlet section, intermediate section and said first and second impellers; and bearing means on said outlet section for providing the only rotational support for the end of said drive shaft adjacent said D-shaped section, said D-shaped section of said drive shaft passing unsupported through said intermediate section.

4,209,285

UNITARY PUMP PACKING

Dennis N. Jasinski, Naperville; Jerry Shifman, Galesburg, and Selwyn Mather, Elmhurst, all of Ill., assignors to The Richardson Company, Des Plaines, Ill.

Filed Nov. 9, 1977, Ser. No. 849,757
Int. Cl.[2] F01B 31/00; F04B 19/22; F16J 9/08
U.S. Cl. 417—571 11 Claims



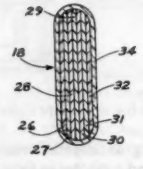
1. In an improved packing in combination with a positive displacement reciprocating liquid chemical feed pump having a cylinder and a piston reciprocably mounted therein, said cylinder having associated therewith an inlet port controlled by an inlet valve and an outlet port controlled by an exhaust valve, the piston having a unitary packing member mounted on a generally concave working side thereof, said packing member having a generally concave working face for operative contact with a liquid to be pumped, a generally convex opposed surface, a working-side radially extending circumferential lip, an axis, and a centrally disposed bore for mounting said packing member over an extension member of said piston, said extension member having a predetermined outside diameter, the improvement compising said generally convex opposed surface of the unitary packing member being preshaped for complementary overlying relationship with the working-side surface of said piston, the unitary packing member including an axially extending outer cylindrical annular flange, said annular flange including a radially extending circumferential lip on said generally convex opposed surface of the packing member, said lip closely overlying a radially extending circumferential lip on said generally concave working side of the reciprocating pump piston, said generally concave working face of the packing member extending from said bore to said annular flange, said centrally disposed bore of the packing member being oversized with respect to said predetermined outside diameter of the extension member, and said packing member being rotatable on said extension member about said axis of the packing member.

4,209,286

SELF LUBRICATING VANE FOR A ROTARY VANE COOLING SYSTEM

Kenneth P. Schwartz, 2604 N. Emerald, Fairborn, Ohio 45324

Filed Sep. 27, 1978, Ser. No. 946,289
Int. Cl.[2] F01C 13/00, 21/00
U.S. Cl. 418—13 3 Claims



1. In a reverse Brayton cycle rotary vane cooling system having a plurality of vanes positioned in slots in a rotor within a housing with vane guide cam surfaces within the housing adjacent the ends of the rotor and cam bearing members supported on said vanes and being positioned in cam engaging

relation to said vane guide cam surfaces, vane structure for said vanes comprising: a plurality of layers of high modulus of elasticity fibers molded into a binding material with the orientation of the fibers in each layer being different than the orientation of the fibers in adjacent layers with a central layer of fibers being positioned with a radial orientation; bearing supports, for said bearing members, molded into opposite ends of the vanes; a self lubricating layer of non-corrosive materials surrounding the vanes and covering the wear surface regions of the vanes; said layer covering the wear surfaces of the vanes including fibers having portions extending radially on opposite sides of the vanes and portions extending over the inner and outer edges of the vanes.

4,209,287

ROTARY VANE COMPRESSOR WITH START-UP PRESSURE BIASING VANES

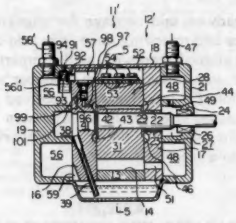
Haruhiko Takada, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 711,339, Aug. 4, 1976, Pat. No. 4,135,865. This application Jan. 18, 1978, Ser. No. 870,316

Claims priority, application Japan, Aug. 6, 1975, 50/108896; Sep. 4, 1975, 50/122272

Int. Cl.[2] **F01C** *21/04;* **F04C** *29/02;* **F16K** *31/08*

U.S. Cl. 418—93 **7 Claims**



1. A rotary compressor comprising:

a housing formed with a bore;

a fluid inlet passageway leading into the bore;

a fluid outlet passageway leading from the bore to a fluid outlet port;

a rotor operatively disposed in the bore in such a manner as to compressively displace fluid from the inlet passageway to the outlet passageway upon rotation thereof;

a lubricant reservoir communicating with the outlet passageway;

a lubricant passageway leading from the lubricant reservoir to the inlet passageway and communicating with the rotor in such a manner that lubricant is caused to flow through the lubricant passageway thereby lubricating the rotor when the pressure in the outlet passageway is greater than the pressure in the inlet passageway;

first valve means provided in the outlet passageway and arranged to close thereby blocking communication of the bore with the outlet port through the outlet passageway when the pressure in the outlet passageway is below a predetermined value and to open thereby communicating the bore with the outlet port through the outlet passageway when the pressure in the outlet passageway is above the predetermined value;

a pressure passageway leading from the outlet passageway to the lubricant passageway; and

pressure valve means provided in the pressure passageway and exposed to the pressure in the outlet passageway to open and close the pressure passageway in accordance with the relation:

$$P1 > P2 > P3$$

where P1 is the predetermined value of pressure in the outlet passageway and is an initial opening pressure of the first valve means, P2 is a predetermined value of pressure in the outlet passageway which is an opening pressure of the pressure valve means and P3 is a predetermined value of pressure in the outlet passageway which is sufficient to maintain the first valve means open after the first valve means is initially opened.

4,209,288

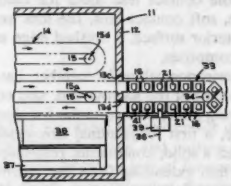
FROZEN CONFECTION PRODUCING SYSTEM

Lawrence F. Tumey, Lakeland, Fla., and Paul Zuker, West New York, N.J., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 23, 1978, Ser. No. 918,521

Int. Cl.[2] **A23G** *9/26, 9/18*

U.S. Cl. 425—113 **2 Claims**



1. Apparatus for preparing a frozen food product having a predetermined shape and a stick protruding therefrom, said apparatus comprising

a refrigeration vault having an opening in one wall thereof,

means for producing freezing temperatures within said vault,

an endless conveyor disposed to transit a path within said refrigeration vault and operating to receive the food product at a loading station and transport the food product therethrough to a discharge station,

extruder means for sequentially forming bodies of freezable foodstuff of predetermined shapes on said conveyor at said loading station, said bodies being completely frozen in said vault prior to said discharge station to form frozen food products,

a stick insert conveyor reach of said endless conveyor extending outwardly of the vault and returning inwardly of the vault through said opening, the portion of said path between said loading station and said conveyor reach being substantially shorter than the remaining portion of said path between the conveyor reach and the discharge station,

means for continuously moving said endless conveyor along said path at a predetermined speed such that said conveyor moves along said path from said loading station through said refrigeration vault to said stick insert conveyor reach for a period of time sufficient to form a frozen crust on the surface of each of said bodies of foodstuff prior to arriving at said stick insert conveyor reach when said refrigeration vault is at a predetermined low temperature,

and means adjacent said stick insert conveyor reach for sequentially inserting sticks into said bodies through their crusts,

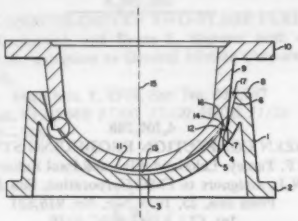
whereby distortion of the predetermined shape of the food product during stick insertion is resisted by the frozen crust thereof.

4,209,289

CONTACT LENS MOLD

Paul D. Newcomb, Franklin, Mass.; Ethan C. Hopkins, So. Woodstock, Conn., and Paul A. Davignon, Uxbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 14, 1979, Ser. No. 39,100
Int. Cl.[2] B29C 5/00; B29D 11/00
U.S. Cl. 425—410 1 Claim



1. A disposable contact lens mold for casting a finished, water swellable, soft contact lens, the lens having a chosen diameter, a posterior surface, a finished edge and an anterior surface which comprises,

a hollow, frustroconical male member having a convex molding surface at the narrow end, said convex molding surface having a first chosen radius for shaping the posterior surface, a first longitudinal axis extending through said member, a solid, continuous, ring-shaped, rigid mold mating portion extending from the narrow end of said male member radially inwardly toward said convex molding surface, said mating portion having first and second edges defining a first mating surface, and a concave junction surface extending from said convex molding surface to said first mating surface, said junction surface having a second chosen radius for shaping the finished edge,

a hollow, inverted frustroconical female member having a cavity at the narrow end for receiving said male member, said cavity having a centrally located concave molding surface, said concave molding surface having a third chosen radius for shaping the anterior surface of said lens, a second longitudinal axis extending through said female member, a second mating surface extending radially outwardly from the periphery of said concave molding surface, said second mating surface having an inner edge and an outer edge, and an outwardly tapering wall extending from said outer edge to the narrow end of said female member, said first edge of said male member and said inner edge of said female member having an identical diameter, said second edge having a diameter chosen to provide an interference fit with said outer edge when said male and female member are united thereby providing coincidence of said first and second longitudinal axes.

4,209,290

BOTTLE-MOLDING SYSTEM

Herbert Rees, Willowdale, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems Limited, Bolton, Canada

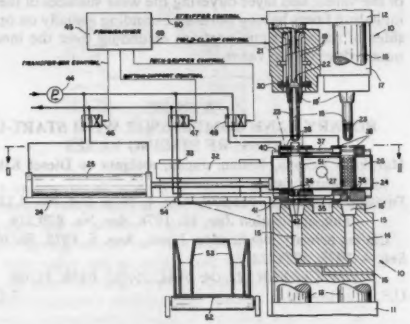
Filed Apr. 7, 1978, Ser. No. 894,376
Int. Cl.[2] B29F 1/14; B29C 17/07
U.S. Cl. 425—547 8 Claims

1. In a system for producing hollow elongate workpieces of thermoplastic material, in combination:

a vertical injection-molding machine including a lower mold portion provided with at least one cavity, an upper mold portion vertically separable from said lower mold portion and provided with at least one elongate core depending into said cavity in a mold-closed position, and clamp means for relatively reciprocating said mold portions;

a horizontally movable carriage at the level of a gap formed between said mold portions in a mold-open position;

drive means synchronized with said clamp means for inserting said carriage into said gap in said mold-open position, said carriage being provided with a plenum chamber forming at least one compartment alignable with said core upon insertion into said gap for receiving a workpiece molded in said cavity and adhering to said core;



transfer means on said carriage for engaging the adhering workpiece and removing same from said core to the compartment aligned therewith, said compartment communicating by way of said plenum chamber with a source of cooling fluid for solidifying the received workpiece; and

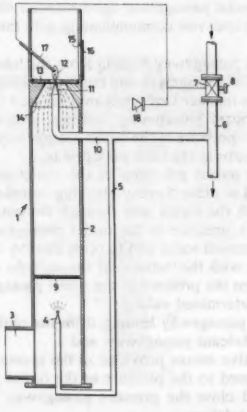
unloading means effective in a withdrawn position of said carriage for removal of the solidified workpiece from said carriage to a receiver therefor.

4,209,291

SAFETY APPARATUS FOR STOPPING GAS LEAKAGES

Maria L. Gandolfi, Travagliato, and Maria L. Bonaga, Fraz.-Candia, both of Italy, assignors to Barbara Horvath, Madrid, Spain

Filed Jun. 5, 1978, Ser. No. 912,843
Claims priority, application Italy, Sep. 26, 1977, 27934 A/77
Int. Cl.[2] F23N 5/24
U.S. Cl. 431—16 6 Claims



1. A safety apparatus against gas leakage in a system for feeding fuel gas, characterized in that it comprises a chamber for admixing gas to air equipped with a port for drawing in ambient air and means for feeding a preselected rate of flow of fuel gas, means for priming a blow up adapted automatically to

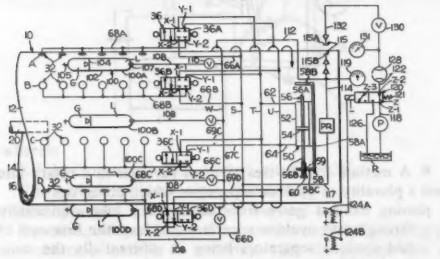
originate the deflagration of the gas-air mixture formed within said chamber when the percentage of gas contained in the mixture attains the flammability limit of the mixture and means for detecting the deflagration adapted to respond to the deflagration of said mixture along with the production of command signals for cutting off the gas feed by said gas feeding system and/or for generating an alarm signal.

4,209,292

FLUID STORAGE AND DISTRIBUTION ARRANGEMENT MOUNTED ON ROTARY REACTOR

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 13, 1978, Ser. No. 960,090
Int. Cl.[2] F27B 7/36
U.S. Cl. 432—105 **11 Claims**



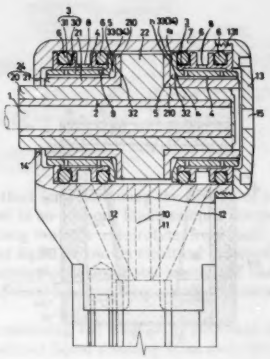
1. A rotary reactor comprising an elongated cylindrical chamber adapted to have a charge of material contained herein upon which a process is being performed in said chamber, a nozzle mounted on and supported by said rotary reactor in fluid communication with said chamber and adapted to dispense a liquid into said chamber required in connection with said process, a hydraulic flow control valve associated with said nozzle to control hydraulic flow to said nozzle, said flow control valve being mounted on and rotatable with said rotary reactor, a hydro-pneumatic accumulator mounted on and rotatable with said rotary reactor, said accumulator including a pneumatic section adapted to receive a pneumatic fluid and a hydraulic section adapted to receive a liquid, said pneumatic section being precharged to a predetermined pneumatic pressure whereby to exert pressure on liquid in said hydraulic section, means hydraulically connecting said hydraulic section of said accumulator to said nozzle through said flow control valve whereby to provide a liquid supply to said nozzle when said flow control valve is in "On" position, a pressure regulating means mounted on and rotatable with said rotary reactor and interposed in the liquid flow path between said accumulator and said flow control valve whereby to maintain a liquid flow rate to said flow control valve of a substantially constant predetermined value when said flow control valve is in an "On" position, conduit means carried by said rotary reactor and in hydraulic communication with said accumulator, said conduit means terminating in a quick detachable connector adapted to detachably engage a stationary source of liquid supply positioned off said rotary reactor, whereby to permit charging said accumulator with liquid, said conduit means being detachable from said stationary source to terminate flow of said liquid from said stationary source of liquid supply to said accumulator.

4,209,293

AIR BEARING FOR A DENTAL HANDPIECE

Hiroshi Sugai, and Shoji Nakayama, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 8, 1978, Ser. No. 884,596
Claims priority, application Japan, Mar. 8, 1977, 52-25765
Int. Cl.[2] A61C 1/12
U.S. Cl. 433—132 **8 Claims**



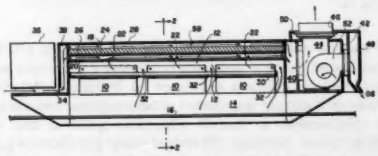
1. An air bearing journaled handpiece for dental treatment having a turbine rotor chucking and cutting tool shaft journaled by bearing units having a pair of forward and rearward thrust gaps and radial gaps provided therein and a driving mechanism for said air bearing journaled handpiece, said handpiece being characterized by partially receding surface portions substantially enlarging said thrust gaps centripetally with respect to the rotational axis of said shaft respectively provided on end faces opposing the thrust gaps of said bearing units, whereby the radial pressure distribution within said thrust gaps is substantially increased.

4,209,294

INFRARED DRYER

Michael Vasilantone, 34 Columbia Rd., Somerville, N.J.

Filed Oct. 13, 1978, Ser. No. 951,222
Int. Cl.[2] F27D 1/12
U.S. Cl. 432—233 **16 Claims**



1. A heating device comprising:

(a) at least one heater mounted in a secondary heat chamber and exending into a primary heat chamber in which objects are to be exposed to heat;

(b) a first air trough defined by a first air trough plate disposed above said secondary heat chamber, said first air trough plate being ported to accept effluent air from said secondary heating chamber; and

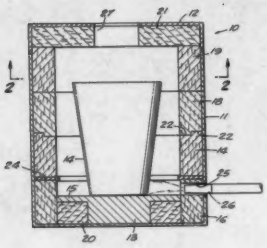
(c) a second air trough defined by a second air trough plate disposed above said first air trough, extending along the upper surface or cover of the dryer, and serving to continually cool the upper surface of the dryer.

4,209,295

FURNACE WITH HOMOGENEOUS REFRACTORY TUBULAR LINER

Carl E. Frahme, and Gary E. Wygant, both of Valencia, Calif., assignors to Industrial Insulations, Inc., City Of Industry, Calif.

Filed Jun. 26, 1978, Ser. No. 919,231
Int. Cl.[2] F27D 1/00
U.S. Cl. 432—247 8 Claims



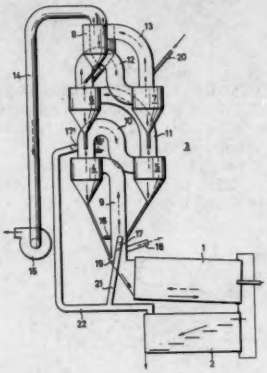
1. That improvement in a high-temperature furnace having a tubular housing closed at one end and having an access closure at its other end, said improvement comprising a refractory lining for said housing comprising at least one homogeneous rigid tubular member formed of multiple generaliy annular layers of inter-bonded refractory fibers vacuum deposited from an aqueous suspension thereof to a wall thickness of at least three inches and having a density of the order of 10–12 pounds per cubic foot.

4,209,296

APPARATUS AND METHOD FOR THE THERMAL TREATMENT OF FINE GRAINED MATERIAL

Herbert Deussner, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,362
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744042
Int. Cl.[2] F27B 7/02
U.S. Cl. 432—14 9 Claims



9. A method for the treatment of particles in a rotary kiln and a plurality of cyclone separators which comprises:

passing exhaust gases from said rotary kiln sequentially through said cyclone separators, at least the first two of said cyclone separators being at substantially the same vertical level,

passing raw material particles into said cyclone separators in countercurrent contact with the exhaust gases passing therethrough,

passing heat treated material from one of said first two cyclone separators into said rotary kiln, and

supplying additional combustion heat to said particles as they pass between said first two cyclone separators.

4,209,297

TRANSFER PRINTING PROCESS

Günter Stephan, Bergisch-Gladbach; Hartmut Birmes, Wuppertal; Artur Haus, Overath, and Erwin Plaza, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

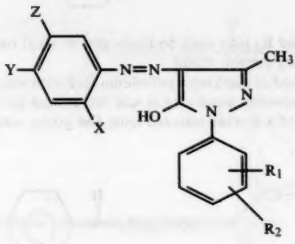
Filed Jan. 27, 1978, Ser. No. 873,020

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704279

Int. Cl.² D06P *1/19*

U.S. Cl. 8—467 **3 Claims**

1. In a transfer printing process for printing sheet-like structures consisting of synthetic or partially synthetic polymeric materials wherein a temporary support is printed or impregnated with a dyestuff which is subsequently transferred to said sheet-like structures, the improvement comprising printing said structures with a dyestuff of the formula



wherein

X is hydrogen, chlorine, methyl, nitro, or CF_3;

Y is methyl, methoxy, nitro, or chlorine;

Z is hydrogen, methyl, or chlorine; and

R_1 and R_2 independently of one another represent hydrogen, chlorine, methyl, or methoxy, with the proviso that at least R_1 or R_2 is chlorine, methyl, or methoxy if X is nitro.

4,209,298

DYE COMPOSITIONS CONTAINING A MIXTURE OF DIBENZYL ETHER AND A CYCLIC ALKYL CARBONATE AS DYE ASSISTANTS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 5, 1978, Ser. No. 912,265

Int. Cl.² D06M *10/64*; D06P *3/02, 3/26*

U.S. Cl. 8582 **5 Claims**

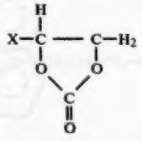
1. The dye composition which comprises:

(A) C. I. Disperse Blue 79 dye

(B) A dye assistant comprising a combination of:

(a) dibenzyl ether with a

(b) compound of the formula:



wherein X is selected from the group consisting of hydrogen, methyl and ethyl.

4,209,299

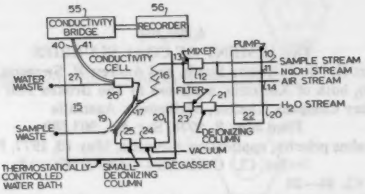
METHOD AND APPARATUS FOR DETERMINATION OF VOLATILE ELECTROLYTES

Robert M. Carlson, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 21, 1978, Ser. No. 879,156

Int. Cl.² G01N *27/40, 27/56, 33/00*

U.S. Cl. 23—230 R **15 Claims**



1. A method for determining the amount of volatile electrolyte present in an aqueous liquid sample, comprising:

transferring volatile electrolyte from said sample into a second liquid of known electrical conductivity through a gas-permeable hydrophobic membrane that does not pass the aqueous liquid, during a predetermined time interval, and

then determining the change in electrical conductivity in said second liquid resulting from such transfer.

4,209,300

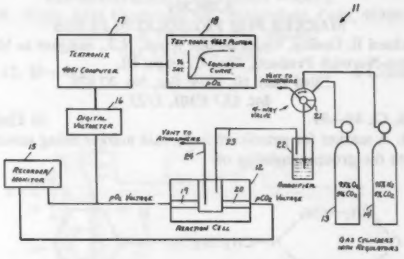
HEMOGLOBIN-OXYGEN EQUILIBRIUM CURVE ANALYZER

Lawrence E. Thibault, Rockville, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Sep. 25, 1978, Ser. No. 945,130

Int. Cl.² G01N *33/16, 27/30, 27/40*

U.S. Cl. 23—230 B **15 Claims**



1. An apparatus for obtaining a hemoglobin-oxygen equilibrium curve for a sample, comprising housing means including a chamber adapted to receive a quantity of said sample, a cup-shaped semipermeable membrane mounted in said chamber and defining externally thereof a substantially annular sample-receiving space within the chamber, means to supply a gaseous reagent to the interior of said cup-shaped membrane, means to compute the rate of gas transport through the membrane into a sample contained in said annular space, electrode means exposed to said annular space to measure the solution partial pressure of the transported gas in the sample, and means to plot the percent gas saturation in the sample against the changes in said partial pressure.

13. A method for obtaining a hemoglobin-oxygen equilibrium curve for a sample comprising enclosing the sample in a space with a semipermeable membrane on one side, supplying gas to the area of the membrane opposite to the sample for diffusion to the sample, directly measuring the partial pressure of the gaseous oxygen in the sample, determining the rate of

oxygen transport into the sample by continuous solution of the diffusion equation, continuously calculating the percent of oxygen saturation, and plotting the percent of oxygen saturation against the changes in partial pressure of the oxygen in the sample.

4,209,301

TREATMENT OF COAL SLURRIES

Stuart K. Nicol, Kotara South, and Andrew R. Swanson, Waratah, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed May 8, 1978, Ser. No. 903,580
Claims priority, application Australia, May 10, 1977, PD0044
Int. Cl.[2] C10L *5/14, 5/40, 5/00*
U.S. Cl. 44—24 **12 Claims**

1. A process for continuously producing agglomerated coal from coal fines, which comprises treating an aqueous slurry of the coal files by

(a) forming an unstable oil-in-water emulsion,

(b) continuously mixing in a vessel the unstable oil-in-water emulsion, in an amount of from about 10 to about 25% by weight of the oil, calculated on a dry coal matter basis, into the slurry under conditions of non-intensive agitation corresponding to a Froude number of 2 to 600 with a residence time in the vessel of at least 15 minutes and for a time at least sufficient to reach phase inversion to form dense, large agglomerates of said coal fines, and

(c) thereafter essentially stripping the aqueous slurry of coal matter by removing the agglomerated coal fines from the remainder of the aqueous slurry.

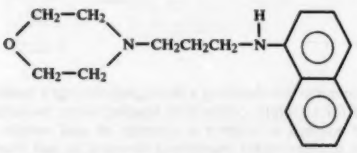
4,209,302

MARKER FOR PETROLEUM FUELS

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

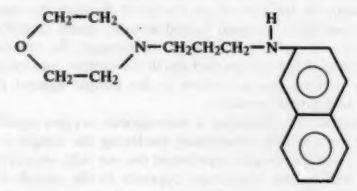
Filed May 10, 1979, Ser. No. 37,875
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—59 **31 Claims**

1. A marker for petroleum fuels, said marker being selected from the group consisting of:



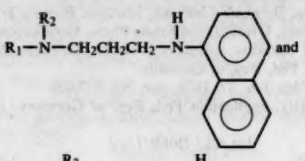
(I)

1-(4-morpholino)-3-(alpha naphthaylamino)-propane,

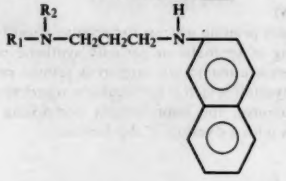


(II)

1-(4-morpholino)-3-(beta naphthylamino)-propane,



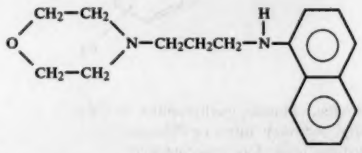
(III)



(IV)

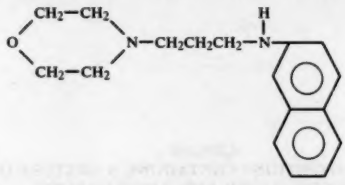
where R_1 and R_2 may each be hydrogen or alkyl having from one to twenty carbon atoms.

8. A method of marking a petroleum fuel with a marker, said method comprising dissolving in said fuel at least about 0.5 part per million of a marker selected from the group consisting of:



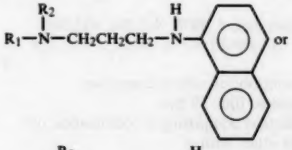
(I)

1-(4-morpholino)-3-(alpha naphthylamino)-propane,

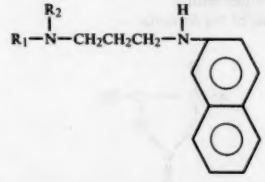


(II)

1-(4-morpholino)-3-(beta naphthylamino)-propane,



(III)

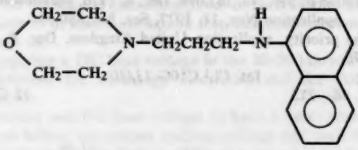


(IV)

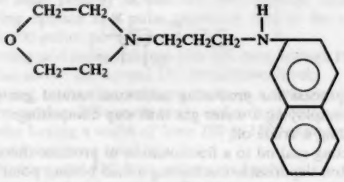
where R_1 and R_2 may each be hydrogen or alkyl having from one to twenty carbon atoms.

16. A method of detecting the presence in a petroleum fuel

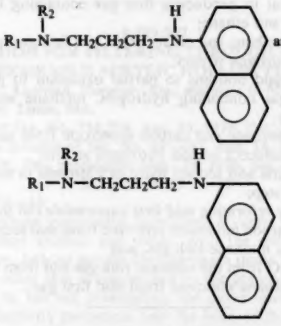
of at least about 0.5 part per million of a marker selected from the group consisting of



1-(4-morpholino)-3-(alpha naphthylamino)-propane,

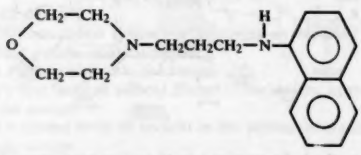


1-(4-morpholino)-3-(beta naphthylamino)-propane,

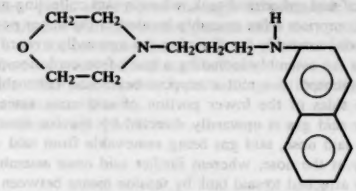


where R_1 and R_2 may each be hydrogen or alkyl having from one to twenty carbon atoms, said method comprising (I) extracting said marker from said marked fuel with an aqueous acidic extractant and (II) admixing with the aqueous acidic extract so obtained a solution of diazotized 2-chlor-4-nitroaniline whereupon a characteristic coloration is obtained.

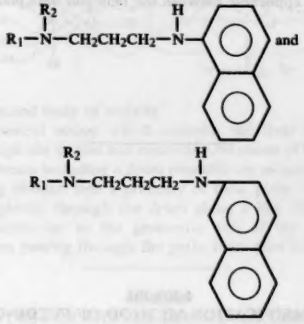
24. A marked petroleum fuel having dissolved therein at least 0.5 part per million of a marker selected from the group consisting of



1-(4-morpholino)-3-(alpha naphthylamino)-propane,



1-(4-morpholino)-3-(beta naphthylamino)-propane,



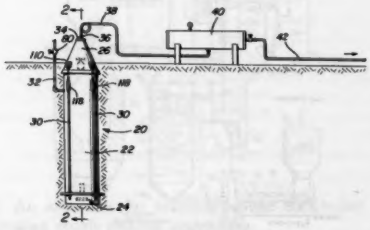
where R_1 and R_2 may each be hydrogen or alkyl having from one to twenty carbon atoms.

4,209,303

METHOD AND APPARATUS FOR RECOVERY OF COMBUSTIBLE GAS FROM WASTE

Jay W. Ricks, 4121 Cambridge Dr., Bakersfield, Calif. 93306

Filed Sep. 8, 1978, Ser. No. 940,862
Int. Cl.[2] C10J *3/00*
U.S. Cl. 48—111 **6 Claims**



3. Apparatus for anaerobic decomposition of organic refuse into a gas containing a substantial proportion of methane comprising a tank, collecting means near the upper portion of said tank, and heating means near the lower portion of said tank, said heating means comprising a base plate having an upwardly projecting pipe sealed to the base plate around an aperture in the base plate, together with a heating element located beneath said base plate for transfer of heat interiorly into said pipe and thence from said pipe by conduction to the contents of the tank, said tank having injection means for controllably introducing water into said tank, whereby a desired degree of heating can be furnished deeply into the organic refuse by conduction through the pipe, the tank being an upright cylinder and said collecting means comprising a cone assembly having an

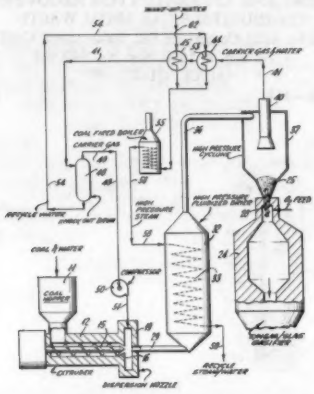
upright nose and lower portion sealingly contacting the upper portion of said cylindrical tank, wherein said collecting means further comprises a fan assembly located in the upper portion of said cone assembly for directing gas upwardly toward said nose, the fan assembly including a spark-free explosion-proof motor mounted to a motor support beam and fastenable to opposite sides of the lower portion of said cone assembly, whereby said gas is upwardly directed by the fan assembly towards said nose, said gas being removable from said cone assembly at the nose, wherein further said cone assembly is sealingly attached to said tank by tension means between said base plate and mounting brackets on the lower portion of said cone assembly, said tension means comprising tie rods longitudinally tightenable by turnbuckles, whereby uniform sealing pressure is applicable between the tank and base plate.

4,209,304

COAL GASIFICATION-METHOD OF FEEDING DRY COAL

Richard V. Kessler, and John T. Nolan, Jr., both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,939
Int. Cl.[2] C10J *3/10*
U.S. Cl. 48—202 **14 Claims**



1. In a coal gasification process employing high pressure conversion of said coal, a method of feeding dry coal to a high pressure gasifier vessel, comprising the steps of

feeding powdered coal having a predetermined percentage of water therewith to an extruder,

continuously extruding said mixture as a compacted extrudate into a high pressure stream of gas while dispersing said compacted extrudate into powdered coal mixed with said gas stream for transport thereby,

drying said stream of dispersed extrudate and gas,

separating said dry dispersed extrudate from said gas, and

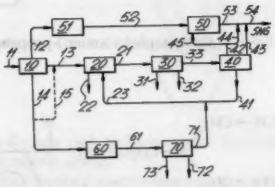
feeding said separated dispersed extrudate into said gasifier vessel.

4,209,305

PROCESS FOR MAKING SUBSTITUTE NATURAL GAS

Henry L. Conway; John A. Hargis, and Henry J. F. Stroud, all of Solihull, England, assignors to British Gas Corporation, London, England

Continuation of Ser. No. 747,698, Dec. 6, 1976, abandoned. This application Nov. 11, 1977, Ser. No. 850,535
Claims priority, application United Kingdom, Dec. 8, 1975, 50192/75
Int. Cl.[2] C10G *13/30*
U.S. Cl. 48—213 **11 Claims**



1. A process for producing substitute natural gas (SNG) without employing a water gas shift step comprising:

providing a crude oil;

subjecting said oil to a fractionation to produce therefrom

(a) a first vaporisable cut having a final boiling point of not greater than about 200° C.,

(b) a second vaporisable cut having an initial boiling point of not less than about 200° C., and

(c) non-vaporisable bottoms;

non-catalytically hydrogenating at least a portion of said second cut to produce a first gas containing hydrogen, methane and ethane;

removing methane and ethane from said first gas to produce a first hydrogen stream;

subjecting said bottoms to partial oxidation to produce a second gas containing hydrogen, methane and carbon monoxide;

removing methane and carbon monoxide from said second gas to produce a second hydrogen stream;

using said first and second hydrogen streams in said hydrogenating step;

catalytically reforming said first vaporisable cut in the presence of carbon monoxide removed from said second gas to produce a methane-rich gas; and

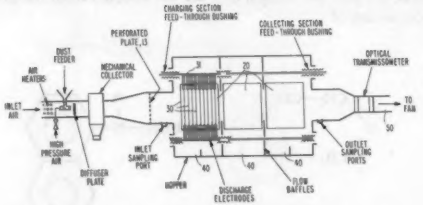
forming SNG from the methane rich gas and from the methane and ethane removed from said first gas.

4,209,306

PULSED ELECTROSTATIC PRECIPITATOR

Paul L. Feldman, Bridgewater, and Krishnaswamy Sampathkumar, Somerville, both of N.J., assignors to Research-Cottrell, Somerville, N.J.

Filed Nov. 13, 1978, Ser. No. 959,987
Int. Cl.[2] B03C *3/02*
U.S. Cl. 55—2 **4 Claims**



1. A method of operating a multi-section precipitator for the collection of high resistivity dust, said precipitator having at

least three sections, each section having discharge electrodes comprised of wires having diameters of from 0.109 to 0.250 inches, said wire electrodes being spaced from 3½ to 5½ inches apart, each section having collecting plates spaced 9 inches apart, the spacing from each electrode to a collecting plate being 4.5 inches, the collecting plates of each section having a total area of at least 8200 square feet, said method comprising the steps of:

a. applying a DC base voltage in the 30–50 kilovolts range between the discharge electrodes and the collection plates;
b. setting said DC base voltage to have a value near to but just below the corona starting voltage and such that the resultant electric field is within the range 3.0–7.5 kilovolts per inch;
c. applying in parallel, to the discharge electrodes of at least one but not more than the first two sections, short pulse voltages in the 50–80 kilovolts range, said pulses being of the same polarity as said DC base voltage, said pulses being applied at a pulse repetition rate in the range of 80–200 pulses per second;
d. setting said pulse voltages plus DC base voltage to have a peak above the normal DC breakdown level;
e. setting said pulse voltages to have a fast rise time not greater than 200 nanoseconds and a short decay time, said pulse having a width of from 250 to 1500 nanoseconds, to avoid excessive sparking;
f. adjusting said DC base voltage in coordination with adjustment of said applied voltage pulses to vary the charging and collecting fields independently of each other and to maintain an average current through the collected dust layer just below or at that value which would cause electrical breakdown of the dust layer.

4,209,307

METHOD FOR FILTERING THROUGH HIGHLY PERMEABLE ACRYLIC HOLLOW FIBERS

Richard L. Leonard, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 714,209, Aug. 13, 1976, Pat. No. 4,084,036, which is a division of Ser. No. 497,437, Aug. 14, 1974, Pat. No. 3,975,478. This application Mar. 20, 1978, Ser. No. 890,554

Int. Cl.² B01D *59/10*

U.S. Cl. 55—16 **1 Claim**

1. A process comprising contacting a vapor mixture, comprising ethyl alcohol and water, with the outer skin of an asymmetric hollow acrylic fiber having a dense inner skin and a porous outer skin characterized by the presence of vacuoles adjacent to, but not penetrating, the dense inner skin so that water selectivity permeates into the bore of the hollow fiber and is removed from the bore and the remaining vapor mixture, having an increased concentration of ethyl alcohol, is removed from the outer skin of the hollow fiber.

4,209,308

SORPTION SYSTEM

Gerry A. Blodgett, 38 June St., Worcester, Mass. 01602

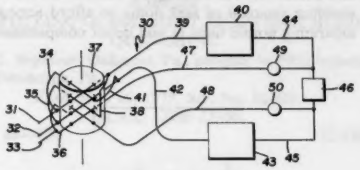
Continuation of Ser. No. 573,727, May 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 478,452, Jun. 12, 1974, abandoned, which is a continuation of Ser. No. 291,911, Sep. 25, 1972, abandoned. This application Aug. 2, 1976, Ser. No. 710,573

Int. Cl.² B01D *53/06*

U.S. Cl. 55—179 **9 Claims**

1. An adsorption system for removing an impurity from a hot fluid stream, comprising:
(a) a cooler placed in the stream,
(b) a first body of sorbent placed in the stream, upstream of the cooler,
(c) a second body of sorbent in the stream, downstream of the cooler,
(d) first means for exchanging the positions of the bodies relative to the stream, the means including a drum rotatable on an axis, the drum being divided into a plurality of flow paths which pass through its geometric axis and through which the stream passes, and
(e) a slip stream means for extracting a portion of the stream from between the bodies of sorbent.

6. An adsorption system for removing an impurity from a fluid stream, comprising:
(a) a first body of sorbent,



(b) a second body of sorbent,
(c) a control means which controls the flow of streams through the bodies and controls activations of the bodies, the means including a drum rotatable on an axis, the drum being divided into a plurality of flow paths which pass completely through the drum along a line through and perpendicular to the geometric axis of the drum, the stream passing through the paths from time to time.

4,209,309

APPARATUS FOR THE SEPARATION OF ISOTOPES BY SEPARATING-NOZZLE PROCESS

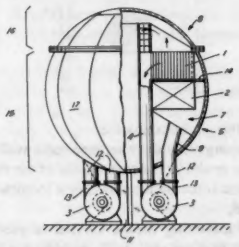
Werner Wenzel, Spellen, Fed. Rep. of Germany, assignor to NUSTEP Trenndüsen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG, Essen, Fed. Rep. of Germany

Filed Mar. 22, 1978, Ser. No. 888,974

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712643

Int. Cl.² B01D *57/00*

U.S. Cl. 55—269 **3 Claims**



1. An apparatus for uranium isotope enrichment by the separating nozzle process, comprising:
a spherical vacuum-tight circular-plan vessel constituted of an upwardly open lower portion and a dome cover surmounting said lower portion, said vessel being formed internally with a plurality of vertical radial partitions subdividing the vessel into a plurality of sectors, and at least one transverse partition subdividing each sector into an upper compartment and a lower compartment, said partition stiffening said vessel;
a central cruciform support comprised of vertical plates joined at the vertical axis of said vessel and supporting said vessel beneath the lower portion, said plates defining four quadrant-shaped spaces below and within the outline of said vessel;
respective coolers received in lower compartments of said sectors;

respective separating-nozzle units received in upper compartments of said sectors;

four compressor units independent of one another and each received in a respective one of said spaces;

duct means connecting said compressor units, respective ones of said coolers and respective separating nozzles in cascade to effect isotope separation said partitions stiffening said lower portions into a self-supporting structure; and

means detachably connecting said dome to said structure for enabling removal of said dome to afford access to said separating nozzle units in said upper compartments.

4,209,310

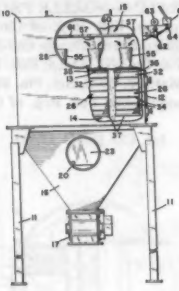
FILTER ELEMENT MOUNTING MECHANISM

James L. Berkhoel, St. Paul Park, Minn., assignor to Donaldson Company, Inc., Mineapolis, Minn.

Division of Ser. No. 847,255, Oct. 31, 1977, which is a continuation of Ser. No. 599,787, Jul. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 486,215, Jul. 5, 1974, abandoned. This application Oct. 5, 1978, Ser. No. 948,745

Int. Cl.[2] B01D *27/06, 46/04*

U.S. Cl. 55—273 **11 Claims**



4. In an air filter, in combination:

a chamber, having an outlet aperture and a wall with an inlet aperture for enabling a normal flow of air therethrough;

a hollow porous filter element having a longitudinal axis and an open end;

filter element mounting means carried in part by said element and in part by said wall, including a first threaded member removably fixed to said element for rotation therewith about the axis thereof, a second threaded member engaging said first threaded member for relative linear and rotary movement thereon, and

connection means secured in said inlet aperture for removably receiving said second threaded member and preventing rotation thereof about said axis and preventing axial movement thereof in at least one direction, so that upon rotation of said filter element in one direction said open end is drawn toward said wall,

all whereby in the course of said normal flow through said chamber airborne particulate matter collects on an outer surface of said element; and

means in said chamber for directing intermittent pulses of air at high pressure into said filter element through said inlet aperture, to periodically remove matter collected on the surface of said filter element.

4,209,311

FILTER FOR LARGE GAS QUANTITIES

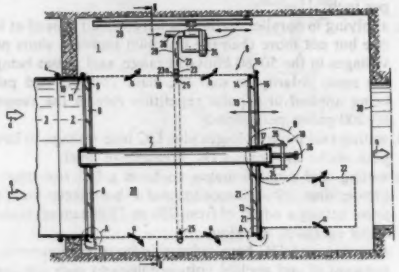
Helmut Deeg, Sulz-Attikon, and Siegmund Schulze, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 23, 1978, Ser. No. 953,636

Claims priority, application Switzerland, Nov. 10, 1977, 13714/77

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—294 **1 Claim**



1. A filter for cleaning large quantities of contaminated gas, comprising:

a stationary drum having an internal hollow space and a lengthwise axis and having a connection side and a side opposite said connection side;

said drum comprising a central tube having a fixed clamping ring arranged at one end region thereof at the neighborhood of said connection side and a movable clamping ring having a drum base and being mounted at said opposite side to axial displacement means which is mounted on said central tube and a filter medium spanning said clamping rings and connected thereto and through which the gas to be cleaned passes;

tensioning means attached to said axial displacement means and being effective in the direction of the lengthwise axis of said drum to cause spanning of said filter medium as a self-supporting structure defining an outer surface of said drum;

said tensioning means enabling axial displacement of said movable clamping ring with said drum base upon said central tube and with respect to said fixed clamping ring;

conduit means fixedly connected with said drum and through which there is conducted the contaminated gas to be cleaned;

said conduit means comprising a gas line connected at the region of said connection side of said drum;

strut means for reinforcing said fixed clamping ring;

means for wipingly passing over a filter medium for removing contaminants therefrom;

said wipingly passing means comprising a compressed gas-blast device equipped with at least one jet nozzle and movable over at least part of the outer surface of the drum and surrounding the periphery of said drum;

said at least one jet nozzle being directed towards the surface of the filter medium;

means for the withdrawal of the separated contaminants from the internal hollow space of the drum; and

said withdrawal means for the contaminants comprising a suction ventilator.

4,209,312
CONTROLLING SIZE IN GLAUBER'S SALT CRYSTAL FORMATION

Carlyle S. Herrick, Alplaus, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,895
Int. Cl.[2] B01D 9/02
U.S. Cl. 62—4 3 Claims

1. In the method of storing thermal energy in and retrieving thermal energy from a liquid-solid phase change material wherein said phase change material is maintained in a container and fluid is circulated over the outer surface of said container to effectuate the desired heat exchange, the improvement comprising the steps of:

employing sodium sulfate decahydrate as the solid form of the phase change material,

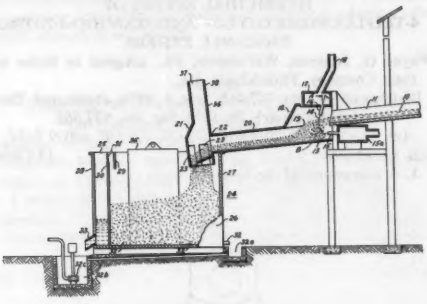
introducing a quantity of additive material into said container soluble in water and releasing ferric ions into contact with said phase change material, said ferric ions being present in an amount effective to prevent the growth of sodium sulfate decahydrate crystals larger than about one-eighth inch in largest dimension and

rotating said container at a pre-selected constant rotational speed about a generally horizontal axis to induce interparticle motion of crystals present in said phase change material.

4,209,313
METHOD FOR CONTROLLING NOXIOUS GASES FORMED DURING GRANULATION OF MOLTEN SLAG

John D. Lynn, Center Valley, Pa., and Gerald N. Carrick, Baltimore, Md., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 2, 1979, Ser. No. 459
Int. Cl.[2] C04B 5/02
U.S. Cl. 65—19 5 Claims



1. In a method for controlling the emission of SO_2 and H_2S vapors formed during granulation of molten slag wherein a volume of high pressure water is sprayed onto the surface of the molten slag in a granulating box, the ratio of the volume of water to the volume of molten slag treated being between about 7 and 11 to 1, whereby the molten slag is broken up into relatively fine sand-like granules of slag and a slag granules-water slurry is formed, the slag granules being characterized by having a size consist of −6.4 mm (−¼ inch) and being substantially free from crystallization, the vapors emitted to the atmosphere being substantially free from SO_2, the improvement comprising:

(a) spraying between about 80 and 90 volume percent of the high pressure water substantially horizontally across the surface of the molten slag and between about 10 and 20 volume percent of the high pressure water at an angle downwardly on top of the surface of the molten slag, the water being sprayed at a pressure of between about 1.1 and 4.2 kilograms per square centimeter and a velocity between about 13.7 and 27.4 meters per second at essentially the same area of the slag to substantially instantaneously solidify the granules of slag and submerge the granules of slag in the water thereby forming a slag granules-water slurry,

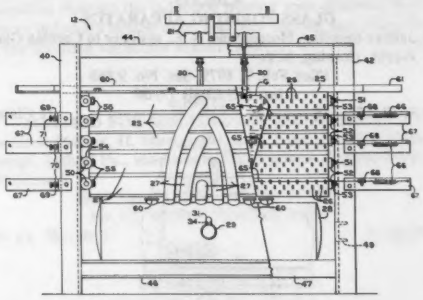
(b) transporting the slag granules-water slurry and vapors formed in step (a) to a distributing box, and

(c) discharging the slag granules-water slurry to a dewatering tank and the vapors to the atmosphere.

4,209,314
CONTROLLING GLASS SHEET BUFFETING DURING QUENCHING

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 16, 1979, Ser. No. 21,035
Int. Cl.[2] C03B 27/00
U.S. Cl. 65—104 12 Claims



1. An apparatus for tempering glass sheets comprising:

a furnace adapted to heat glass sheets to a temperature suitable for tempering;

a quenching station including a pair of opposed arrays of orifices adapted to direct blasts of tempering medium in a generally horizontal direction from opposite banks of quench modules onto opposite surfaces of a glass sheet received therebetween, each bank of quench modules receiving tempering medium under pressure from a reservoir; and

means for conveying a glass sheet from the furnace into the quench station along a longitudinal path between said arrays of modules, said conveying means including freely hanging tongs adapted to grip an upper marginal edge portion of a glass sheet so as to support the glass sheet in a generally vertical disposition;

means to supply tempering medium comprising blower means, a main supply pipe communicating with said blower means, a pair of branch conduits of relatively large cross-section, one of the latter supplying tempering medium to one of said reservoirs and the other of the latter supplying tempering medium to the other of said reservoirs, valve means capable of gross adjustment only in each branch conduit providing gross control of the tempering medium pressure said branch conduits supply to said reservoirs, a bypass pipe of relatively small cross-section bypassing the portion of at least one of said branch conduits containing its said valve means, and a relatively small valve capable of fine adjustment to apply fine control of the tempering medium pressure supply in said reservoir supplied by said branch conduit provided with said bypass pipe.

5. A method of tempering a series of glass sheets comprising:

gripping an upper marginal edge portion of each glass sheet with tongs so as to support each glass sheet in a generally vertical position;

while thus supported, conveying each glass sheet along a longitudinal path through a heating chamber wherein the

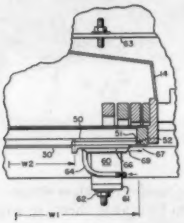
glass is heated to a temperature suitable for tempering and then through a quenching station wherein blasts of tempering medium of controlled pressure are directed via branch conduits provided with valve means capable of rough adjustment only onto opposite sides of each glass sheet to impart a temper thereto;

wherein the improvement comprises reducing buffeting of the glass sheets by the blasts of tempering medium by diverting part of said tempering medium directed onto one side of each glass sheet through a bypass pipe provided with a valve capable of fine adjustment in bypassing relation to the valved portion of said branch conduit that supplies tempering medium on said side and finely adjusting the valve in said bypass pipe until said buffeting is reduced.

4,209,315
GLASS FORMING APPARATUS

J. Jeffrey Spurling, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 7, 1979, Ser. No. 9,865
Int. Cl.[2] C03B 17/00
U.S. Cl. 65—145 12 Claims



1. In an apparatus for forming multiple ply sheet glass directly from separate sources of molten vitreous material while maintaining such separate sources free from exposure to detrimental gaseous media during the formation of such sheet glass, metering means in communication with each of said separate sources of vitreous material including; a pair of opposed surface portions defining a central longitudinal delivery passage for delivering therefrom molten glass from one source of vitreous material, and a pair of opposed channels therein for delivering molten glass from the other source, the improvement comprising: at least one insert means adapted to mate with the metering means in said delivery passage and opposed channels for reducing the flow of molten glass therethrough when located in mating relation therewith to provide sheet glass having a width narrower than the width of said delivery passage.

4,209,316
METHOD AND MATERIALS FOR ENHANCEMENT OF PLANT GROWTH CHARACTERISTICS

Robert G. McDaniel, and B. Brooks Taylor, both of Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Filed Jun. 2, 1978, Ser. No. 912,061
Int. Cl.[2] A01N 21/02, 13/00, 9/36, 9/22
U.S. Cl. 71—77 10 Claims

1. In the process for enhancement of growth characteristics of plant seed and seedlings which consists of treating with an effective amount of one or more nucleosides and/or nucleotides, the improvement comprising treating with an effective amount of a non-phytotoxic buffering agent to provide a quantitative ratio of 1×10^{-6} to 2×10^{-2} moles of nucleoside and/or nucleotide per 1 to 1×10^{-3} moles of buffering agent.

4,209,317
HERBICIDAL COMPOSITIONS

Adolf Fischer, deceased, late of Mutterstadt, Fed. Rep. of Germany (by Caecilia E. Fischer, heiress-at-law), assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 627,965, Nov. 3, 1975, Pat. No. 4,057,414. This application Aug. 25, 1977, Ser. No. 827,584
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1974, 2454576
Int. Cl.[2] A01N 9/00, 9/14, 9/20
U.S. Cl. 71—88 4 Claims

1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture of herbicides consisting essentially of

(a) O-(isopropylaminosulfonyl)-glycolic acid-N-butyn-1-yl-3-anilide,
O-(methylaminosulfonyl)-glycolic acid-N-isopropylanilide,
O-(methylaminosulfonyl)-glycolic acid hexamethylene amide,
N-methylacetanilido-α-isopropylsulfite,
O-(dimethylaminosulfonyl)-glycolic acid-N-methylanilide,
O-(diethylaminosulfonyl)-glycolic acid-N-isopropylanilide
O-(dimethylaminosulfonyl)-glycolic acid-N-methylanilide or
3-(N-isopropylaminosulfonyloxyacetyl)-3-azabicyclo-(3,2,2)-nonane, and

(b) 3-methoxycarbonylaminophenyl-N-(3′-methylphenyl)-carbamate,
3-(N-m-trifluoromethylphenylcarbamoyloxy)-(p-methylphenyl)methylcarbamate, or
3-(N-m-methylphenylcarbamoyloxy)-acetoacetic acid anilide

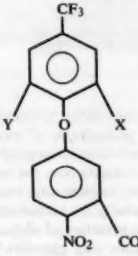
in a weight ratio of (a) to (b) in the range of 80:20 to 20:80.

4,209,318
HERBICIDAL ESTERS OF 4-TRIFLUOROMETHYL-3-CARBOXAMIDO-4-NITRO DIPHENYL ETHERS

Wayne O. Johnson, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 747,466, Dec. 3, 1976, abandoned. This application Jul. 20, 1978, Ser. No. 927,062
Int. Cl.[2] A01N 9/20; C07C 103/75, 121/60; A01N 9/24
U.S. Cl. 71—88 13 Claims

1. A compound of the formula



wherein

X is a hydrogen atom, a halogen atom, a trifluoro-methyl group, a (C_1–C_4)alkyl group, or a cyano group,

Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group, and

Z is a group of the formula —NRZ′, wherein Z′ is a (C_2–C_6)haloalkenyl group, a (C_3–C_6)alkynyl group, a (C_3–C_6)haloalkynyl group, a (C_8–C_{12})aralkenyl group, a halo-, methyl-, or nitro- substituted (C_8–C_{12})aralkenyl group, a (C_4–C_7)cycloalkenyl group, or a (C_3–C_6)epoxyalkyl group, and

R is a hydrogen atom or a (C_1–C_4)alkyl group.

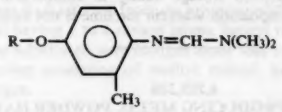
10. A method of controlling weeds which comprises applying to the surface of the growth medium prior to the emergence of the weeds from the growth medium a compound of claim 1 in an amount effective to control the growth of the weeds.

4,209,319
HERBICIDALLY ACTIVE PHENYLFORMAMIDINE COMPOUNDS

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Dieter Duerr, Bottmingen, and Otto Rohr, Therwill, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 311,057, Dec. 1, 1972, abandoned. This application Jun. 2, 1976, Ser. No. 692,066
Int. Cl.² C07C *123/00*; A01N *9/20*
U.S. Cl. 71—121 **12 Claims**

1. A phenylformamidine compound of formula I



(I)

wherein R is propenyl mono- or disubstituted by chlorine or bromine and its acid plant growth regulating acceptable addition salts.

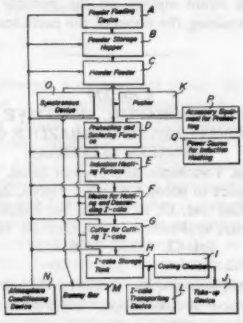
8. A herbicidal composition containing as active ingredient a herbicidally effective amount of a phenylformamidine compound of formula I claim 1 or an acid addition salt thereof according to claim 1 together with an inert carrier and/or extender.

9. A method of controlling undesirable plant growth which comprises applying to a locus where undesirable plant growth is to be controlled, a herbicidally effective amount of a phenylformamidine compound of formula I or an acid addition salt thereof according to claim 1.

4,209,320
PROCESS FOR PRODUCING LOW-OXYGEN IRON-BASE METALLIC POWDER

Yoshihiro Kajinaga; Minoru Nitta, both of Chiba; Ichio Sakurada, Ichihara, and Shunji Ito, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 775,924, Mar. 9, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 942,023
Claims priority, application Japan, Mar. 12, 1976, 51-26708
Int. Cl.² B22F *9/00*; C22C *33/02*
U.S. Cl. 75—0.5 BA **6 Claims**

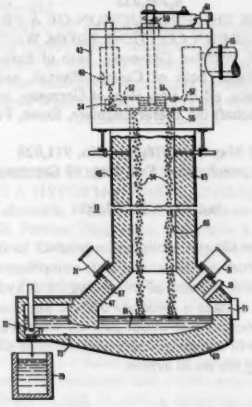


1. A process for producing low-oxygen iron-base metallic powder in a shaft-type apparatus comprising a preheating zone and an induction heating zone, characterized by alloying and/or admixing iron-base metallic raw powder to be subjected to a final reduction, which has an apparent density corresponding to 16 to 57% of theoretical true density, an oxygen content of not more than 6% by weight and a particle size of not more than 1 mm, preheating the starting powder at a temperature of 780° to 1,200° C. in a non-oxidizing atmosphere having a thermodynamically calculated oxygen partial pressure of not more than 2.1×10^{-1} mmHg and a dew point of not more than −5° C., while continuously descending through the preheating zone downward, to form a preheated and sintered cake with a cylindrically sintered shell layer, wherein a volume ratio of the shell layer is from 20% up to an amount less than that where the sinter density results in loss of good pulverizability in subsequently produced induction heated cake, induction heating the resulting preheated and sintered cake at a temperature of 850° to 1,400° C. in the same atmosphere, by applying an alternating power of 50 Hz to 500 kHz from a power supply to effect deoxidation and decarburization, while continuously descending through the induction heating zone downward, to form an induction heated cake, and then cooling and pulverizing the resulting induction heated cake.

4,209,321
METHOD FOR MELTING MACHINE CHIPS

Francis J. Harvey, II, Murrysville, and Maurice G. Fey, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 23, 1979, Ser. No. 32,325
Int. Cl.² C22B *4/10*; C21C *5/52*
U.S. Cl. 75—10 R **5 Claims**



1. A method for melting metal chips comprising the steps of:
(a) feeding metal chips into a preheating chamber containing non-oxidizing gases;
(b) moving the chips through the preheater in a counterflowing atmosphere of non-oxidizing gas to preheat the chips, and to partially eliminate any surface compounds;
(c) moving the chips into a pre-reducing chamber and in a counterflowing atmosphere of non-oxidizing gas to completely eliminate any surface compounds;
(d) collecting the metal chips in a melting chamber;
(e) striking an electric arc in an axial gap between generally hollow, cylindrical electrodes, said electrodes forming a chamber for said arc;
(f) causing the arc to rotate and form a substantially cylindrical arc path between the electrodes;
(g) directing non-oxidizing gas through the gap into the arc chamber to thereby form an elongated arc heated gas jet;
(h) feeding non-oxidizing gas into the melting chamber; and

(i) removing molten metal derived from the melted chips from time to time as required.

4,209,322

METHOD FOR PROCESSING DUST-LIKE MATTER FROM METALLURGICAL WASTE GASES

Wilhelm Janssen, Mülheim; Karl-Heinrich Vopel, and Günter Meyer, both of Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Apr. 29, 1976, Ser. No. 681,510

Claims priority, application Fed. Rep. of Germany, May 3, 1975, 2519810

Int. Cl.[2] C21B *13/08*

U.S. Cl. 75—25 7 Claims

1. A method for processing dust material arising from dust removing systems in the iron and steel industry comprising: forming green pellets by pelletizing the dust material with a moisture content of between 10% and 16% for less than 6 minutes with an addition of water such that the moisture content of the green pellets is between 17% and 30%; and introducing a charge of the green pellets having a moisture content of between 17% and 30% and a reducing agent into a rotary furnace to reduce the green pellets.

4,209,323

PROCESS FOR THE PRODUCTION OF A PRODUCT WITH HIGH CARBON CONTENT FROM WASTE SOOT

Heinz Echterhoff; Wilfried Gemmeke, both of Essen; Karl H. Koch; Erich Raulf, both of Castrop-Rauxel, and Joachim Sieckmann, Essen, all of Fed. Rep. of Germany, assignors to Verkaufsgesellschaft fur Teererzeugnisse, Essen, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,028

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726268

Int. Cl.[2] C21C *7/00*

U.S. Cl. 75—48 13 Claims

1. A process for the production of a product having a high carbon content from waste soot which comprises forming a molded article from a material consisting of a hydrous soot material which contains a hydrous carbon and has a water content of from about 5% to about 20% by weight and from 0 to 25% by weight of an agent which forms a coke structure or frame, and coking the mold article.

4,209,324

TITANIUM-CONTAINING TREATMENT AGENTS FOR MOLTEN FERROUS METAL

John F. Wallace, Shaker Heights, and Robert W. Neuman, North Ridgeville, both of Ohio, assignors to Foseco International Limited, Birmingham, United Kingdom

Filed Oct. 23, 1978, Ser. No. 953,953

Claims priority, application United Kingdom, Oct. 21, 1977, 43954/77

Int. Cl.[2] C22B *9/10*

U.S. Cl. 75—58 5 Claims

1. In a process for the introduction of titanium into a molten ferrous metal located in a furnace or ladle the improvement which comprises adding a treating agent which is in the form of a compact consisting essentially of titanium and at least one alkali metal halide in order to obtain a titanium recovery of at least 75%.

4,209,325

DESULPHURATION OF METALS

Stephen M. Cooper, Consett; Thomas H. Webster, Knowle, both of England, and Helmut Jaunich, Raesfeld, Fed. Rep. of Germany, assignors to Foseco International Limited, Birmingham, England

Filed Dec. 15, 1978, Ser. No. 969,977

Claims priority, application United Kingdom, Dec. 16, 1977, 52565/77

Int. Cl.[2] C21C *7/02*; C22B *9/10*

U.S. Cl. 75—58 10 Claims

1. An injectable composition, for desulphurising a molten ferrous metal, comprising an alkaline earth metal and lime, in which the lime is in the form of a sintered mixture of lime and at least one fluxing agent usable with lime to form a desulphurising slag for molten ferrous metals, the mixture of lime and fluxing agent having been sintered at 1100°–1200° C. and then screened, said composition being characterized by a reduced rate of water adsorption on exposure to the atmosphere and consequently improved storage ability in comparison to a corresponding composition wherein the lime is not sintered.

4,209,326

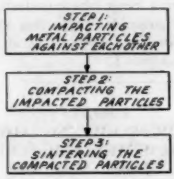
METHOD FOR PRODUCING METAL POWDER HAVING RAPID SINTERING CHARACTERISTICS

Albert J. Klein, Arlington Heights, Ill., and William H. Hooper, Fairfield, Conn., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 810,479, Jun. 27, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 916,852

Int. Cl.[2] B22F *3/00, 1/00*

U.S. Cl. 75—211 5 Claims



1. A powder metallurgical process for changing the characteristics of as-water-atomized ferrous metal particles having oxide skins comprising:

(a) impacting said particles against each other in whirlwind of rapidly moving gas at velocities sufficient to crack and shatter the oxide skins of said particles while

(b) inducing strain energy on the particle surfaces only without straining the cores of the particles.

4,209,327

ELECTROPHOTOGRAPHIC SENSITIVE ELEMENT WITH BENZYLAMINO CARBAZOLE CHARGE TRANSFER MATERIAL

Masafumi Ohta, Yokohama, and Kiyoshi Sakai, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

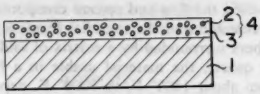
Filed Oct. 17, 1978, Ser. No. 952,007

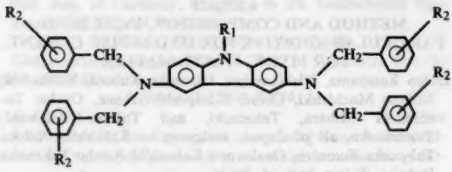
Claims priority, application Japan, Oct. 20, 1977, 52-125183

Int. Cl.[2] G03G *5/04, 5/14*

U.S. Cl. 430—82 7 Claims

1. An electrophotographic sensitive element which comprises an electroconductive support and a photosensitive layer containing a charge-carrier generating pigment and a charge transfer substance formed on said support, in which said charge transfer substance is at least one member of the group of compounds represented by the following general formula:





wherein R_1 is selected from the group consisting of lower alkyl radical having 1 to 4 carbon atoms, benzyl radical and benzyl radical substituted with halogen atom: and R_2 is selected from the group consisting of methyl radical, halogen atom and hydrogen.

4,209,328

DYE IMAGE FORMING PROCESS

Yuzuru Sato; Ryuichiro Kobayashi, both of Hachioji; Naoshi Kunieda; Kazumasa Watanabe, both of Tokyo; Noboru Mizukura, Hachioji; Kenji Yoshida, Yokohama, and Tadanori Oya, Kawasaki, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Mitsubishi Chemical Industries Limited, both of Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,867

Claims priority, application Japan, Jun. 29, 1976, 51-77148

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.[2] G03C *5/54, 1/40, 9/00, 1/10*

U.S. Cl. 430—225 **20 Claims**

1. In a dye image forming process in color photography comprising imagewise exposing a photographic element comprising a support and a light sensitive silver halide emulsion layer, and processing the exposed photographic element with an alkaline processing solution in the presence of a dye developer whereby a dye image corresponding to the imagewise exposure is formed by oxidation of said developer as a function of development of silver halide, the improvement which comprises the dye developer being a mono azo dye developer represented by the following formula:

$$X—N{=}N—Y—NH—Z$$

wherein X represents a monovalent group selected from an aromatic group, a non-aromatic-heterocyclic active-methylene-containing group, a non-aromatic-heterocyclic active-methyne-containing group, an aliphatic active-methylene-containing group, and an aliphatic active-methyne-containing group; and Y represents divalent and monovalent groups of an aromatic group; and Z represents phenyl at least one of the X, Y and Z has therein at least one of the developer groups which are either capable of developing silver halide or changeable to a group capable of developing silver halide, the azo radical (—N=N—) and the secondary amino radical (—NH—) are respectively attached to the adjacent carbon atoms in Y, the azo radical being attached to an aromatic ring of the aromatic group of X or to the active methylene or methyne of X and is attached to an aromatic ring of the aromatic group of Y, and the amino radical is attached to aromatic rings of Y and Z.

4,209,329

LOW SILVER COATING WEIGHT, HIGH SPEED FILMS HAVING TWO SIMILAR EMULSION LAYERS

Donald Lohner, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 792,707, May 2, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,773

Int. Cl.[2] G03C *1/76*

U.S. Cl. 430—502 **10 Claims**

1. A photographic film comprising a support and a photosensitive gelatino-silver halide emulsion layer on said support, characterized in that two layers of the same emulsion are coated on the support, and a dot adjuvant consisting of a polyoxyethylene compound is divided between the layers in such a way that 60–100% of the polyoxyethylene compound is in the top layer and 40–0% thereof is in the bottom layer; said polyoxyethylene compound having the formula

$$RO(CH_2CH_2O)_nR_1$$

wherein R is either hydrogen, a C_1–C_{18} alkyl group, a C_6–C_{12} aryl group, a C_7–C_{18} alkylaryl group, or a C_7–C_{18} arylalkyl group; R_1 is hydrogen or a C_1–C_3 alkyl group; and n=6–2500.

4,209,330

METHOD FOR FORMING CLUSTERS OF NOBLE METAL SILVER PRECIPITATING NUCLEI

Stanley M. Bloom, Waban, and Boris Levy, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 649,201, Jan. 14, 1976. This application Apr. 4, 1978, Ser. No. 897,944

Int. Cl.[2] G03C *1/48;* **C03C** *17/06;* **C09D** *5/00;* **B01J** *13/00*

U.S. Cl. 430—212 **8 Claims**

1. The method of forming clusters of noble metal silver-precipitating nuclei which comprises the steps of reducing a noble metal salt or complex to form a colloidal suspension of said nuclei and subsequently inducing instability into the thus-formed colloid whereby said clusters are formed.

4,209,331

ELECTROLESS COPPER COMPOSITION SOLUTION USING A HYPOPHOSPHITE REDUCING AGENT

Peter E. Kukanskis, Watertown; John J. Grunwald, New Haven; Donald R. Ferrier, Thomaston, and David A. Sawoska, Woodbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed May 25, 1978, Ser. No. 909,209

Int. Cl.[2] C23C *3/02*

U.S. Cl. 106—1.23 **20 Claims**

1. An electroless copper deposition solution comprising, in addition to water, a soluble source of cupric ions, a complexing agent effective to maintain said cupric ions in solution at pH levels between 5 and 13, and a reducing agent effective to reduce cupric ions to copper as a deposited conductive metal film on a catalyzed non-conductive surface of a substrate when in contact with said solution, wherein said reducing agent is a soluble source of hypophosphite ions; said complexing agent is selected to be effective at pH levels between 5 an 13 for complexing cupric ions; and said solution pH is coordinated within said range of 5 to 13 for each complexer selected to give said deposited conductive copper film.

4,209,332

METHOD FOR MANUFACTURING PENCIL LEADS

Shinji Tsujio, Sakai, Japan, assignor to Sakura Color Products Corp., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,505

Int. Cl.[2] C09D *13/00*

U.S. Cl. 106—19 **16 Claims**

1. A method for manufacturing pencil leads which comprises:

mixing 100 parts by weight of graphite, 30 to 60 parts by

weight of water-soluble nigrosine, an aqueous emulsion which contains 10 to 30 parts by weight of wax;

said wax melting at a temperature between about 45° C. and about 90° C. and being selected from the group consisting of

a. esters of higher fatty acids and higher aliphatic alcohols,

b. petroleum wax,

c. animal fats,

d. vegetable fats,

e. fatty acids of 2 to 12 carbon atoms,

f. esters of fatty acids having 12 to 22 carbon atoms and a hydroxyl compound selected from the group consisting of phenols and aromatic alcohols,

g. higher alkyl ketones selected from the group consisting of palmitone and stearone,

h. amides selected from the group consisting of industrial grade palmitic acid amide and stearic acid amide,

i. polyethylene having a molecular weight of about 1000 to 10000;

and sufficient water to permit the mixture to be extruded;

extruding the resultant base mixture from a die into rods;

drying the extruded rods to remove the water contained therein; and

baking the dried rods at elevated temperatures to form pencil leads.

4,209,333

POLYGLYCOL ESTERS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS SURFACE-ACTIVE AGENTS

Sienling Ong, and Ulrich Cuntze, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

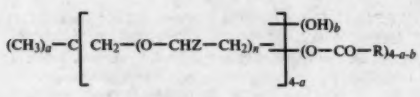
Filed Jun. 21, 1978, Ser. No. 917,497

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728767; Dec. 31, 1977, 2759204

Int. Cl.[2] B01F *17/00*; C09D *11/00, 11/14*; C11C *3/04*

U.S. Cl. 106—25 **14 Claims**

1. Compounds of the formula



in which

R is an open-chain aliphatic radical having from 9 to 19 carbon atoms; Z stands for hydrogen or methyl, the ratio of H:CH_3 being from 2:1 to 4:1;

a is zero or 1,

b is 1 to 1.5, and

(4-a)-n is 150 to 300.

6. A process for modifying the surface or interface tension of liquids, which comprises adding to said liquid an effective amount to accomplish said modification of a compound as defined in claim 1.

13. A printing paste or padding liquor containing per kilogram of paste or per liter of liquor 0.1 to 100 g of a compound as defined in claim 1.

4,209,334

POROUS CERAMIC SEALS AND METHOD OF MAKING SAME

Carlino Panzera, Belle Mead, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 677,258, Apr. 15, 1976, Pat. No. 4,075,364. This application Dec. 12, 1977, Ser. No. 859,606

Int. Cl.[2] C03C *3/08*

U.S. Cl. 106—54 **2 Claims**

1. A ceramic material made of a particle mixture of a first material having a composition of 35–55 percent SiO_2 + 45–55 percent Al_2O_3 and up to 2 percent a second material having a composition of borosilicate glass, each of the particles of the components having a size range up to 80 microns, wherein upon sintering the first and second component materials, free quartz is released and the material forms a structure having mullite fibers surrounded by a matrix of said glass containing dissolved quartz, the material usable in a high temperature range from about 1800° F. to 3000° F. depending upon the erosion and loading environments.

4,209,335

METHOD AND COMPOSITION, INCLUDING PARTICULAR ADDITIVE FOR HYDRAULIC CEMENT, FOR FIXING WASTE MATTER

Ichiro Katayama, Nishinomiya; Hirosuke Kubota, Kawanishi; Mitsuo Mochizuki, Chiba; Kuniyoshi Sakane, Osaka; Toshimichi Mihara, Takatsuki, and Tokuzo Kitawaki, Takarazuka, all of Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka and Kabushiki Kaisha Takenaka Doboku, Tokyo, both of, Japan

Filed May 24, 1978, Ser. No. 909,233

Claims priority, application Japan, May 25, 1977, 52/59848

Int. Cl.[2] C04B *7/02, 7/35*

U.S. Cl. 106—89 **21 Claims**

1. A method for solidifying or consolidating noxious waste comprising admixing said noxious waste with hydraulic cement, and additive mixture consisting of (A) and (B) wherein:

(A) is at least one sulfate selected from the group consisting of aluminum sulfate, alum, ferrous sulfate and ferric sulfate;

(B) is at least one alkaline metal salt selected from the group consisting of alkaline metal carbonate, bicarbonate and silicate;

water as needed to cause solidification or consolidation of the resulting mixture; and

(A) and (B) being present in an amount substantially corresponding to the mutual stoichio metric proportions.

4,209,336

METHOD OF ENHANCING THE COMPRESSIVE STRENGTH OF HYDRAULIC CEMENT COMPOSITION

Robert W. Previte, Lawrence, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 860,037, Dec. 12, 1977, abandoned, which is a division of Ser. No. 744,465, Nov. 24, 1976, abandoned. This application Feb. 16, 1979, Ser. No. 13,334

Int. Cl.[2] C04B *7/35*

U.S. Cl. 106—90 **33 Claims**

1. A hydraulic cement composition consisting essentially of a hydraulic cement and a synthetic surface active agent having the following characteristics: (a) a cloud point not in excess of about 80 degrees centigrade; and (b) a mechanically-induced agitated foam height of less than about 30 millimeters; said surface active agent being present in an amount within the range of from about 0.001 to about 0.10 percent by weight based upon said cement, said amount being sufficient to increase the compressive strength of the hydrated cement composition, said surface active agent further being selected from the group consisting of non-ionic block copolymers of alkylene diamines and one or more alkylene oxides; non-ionic acetylenic glycols and reaction products thereof with alkylene oxides; non-ionic polyethylene glycol esters; non-ionic polyoxyethylene ethers of oleyl alcohol; anionic phosphate esters of an ethoxylated alkylphenol, potassium salt; non-ionic block copolymers prepared by the sequential addition of ethylene oxide and then propylene oxide to an ethylene glycol base; non-ionic block copolymers prepared by sequential addition of propylene oxide and then ethylene oxide to a propylene glycol nucleus wherein (a) the molecular weight of the resulting poly (oxypropylene) portion of the copolymer ranges from about 1750 to about 2750 and the resulting percent poly(oxyethylene) portion in the total copolymer molecule is from about 10 to about 30 (b) said molecular weight is from about 2750 to about

4000 and said percent poly (oxyethylene) is from about 10 to about 20, (c) said molecular weight is 950 and said percent poly (oxyethylene) is 10, (d) said molecular weight is 1200 and said percent poly(oxyethylene) is 20; and mixtures of such.

4,209,337

PREPARATION OF HARDENABLE BINDING AGENTS BASED ON CEMENT AND BITUMINOUS EMULSIONS

Helmut Wagner, Ketsch, and Fritz Hess, Mannheim, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,643

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809537

Int. Cl.² C04B 7/356

U.S. Cl. 106—96 12 Claims

1. Hardenablee binding agents comprising cement and emulsions of bituminous products, said emulsions containing surface-active betaines as the emulsifiers.

4,209,338

CONCRETE FOR THE LINING OF TUNNEL TUBES

Wolf Magnus, Norderstedt, Fed. Rep. of Germany, assignor to Hochtief AG Vorm. Gebr. Helfmann, Essen, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 937,971

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739568

Int. Cl.² C04B 7/02

U.S. Cl. 106—99 6 Claims

1. A nonseparating pumpable concrete composition for use in the lining of a tunnel which consists essentially of a concrete of concrete group BII of German Industrial Standard DIN 1045 and a steel-pin additive consisting of steel pins having a length between about 35 to 50 mm and a thickness of about 0.8 to 1.2 mm.

4,209,339

CEMENT COMPOSITIONS

Robert Smith-Johannsen, Incline Village, Nev., assignor to Norcem A/S, Oslo, Norway

Filed Jun. 5, 1978, Ser. No. 912,837

Int. Cl.² C04B 9/02, 9/14

U.S. Cl. 106—106 22 Claims

1. A Sorel cement formula composition comprising magnesium chloride, magnesium oxide, water and ethyl silicate, said ethyl silicate being present in a water stabilizing effective amount.

4,209,340

CELLULOSE ESTER RESIN COMPOSITION

Hideo Yabune, and Masami Nambu, both of Himeji, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Feb. 27, 1978, Ser. No. 881,628

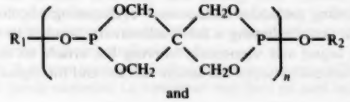
Claims priority, application Japan, Mar. 14, 1977, 52-27866

Int. Cl.² C08L 1/10

U.S. Cl. 106—176 11 Claims

1. A resin composition comprising (A) a cellulose organic acid ester resin, as the principal resin component, said cellulose organic acid ester resin having blended therein a discoloration-preventing agent consisting of (B) one or a mixture of two or more compounds selected from organic phosphite compounds having the formulae (i) and (ii):

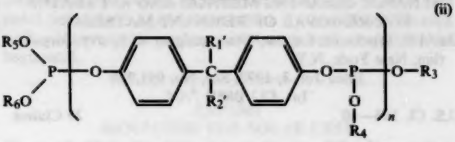
(i)



and

-continued

(ii)



wherein R_1, R_2, R_3, R_4, R_5 and R_6, which are the same or different, each is hydrogen, alkyl, aryl, alkylaryl, arylalkyl, aryloxyalkyl, alkoxyaryl, alkoxyalkyl, polyalkoxyalkyl, polyalkoxyaryl, or polyaryloxyalkyl, with the proviso that only up to one of R_1 and R_2 and only up to two of R_3, R_4, R_5 and R_6 can be hydrogen, and R_1' and R_2', which are the same or different, each is hydrogen, alkyl, aryl, alkoxyalkyl, aryloxyalkyl, alkoxyaryl, arylalkyl, alkylaryl, polyaryloxyalkyl, polyalkoxyalkyl or polyalkoxyaryl, and n is a number of at least 1, said composition containing from 0.01 to 1.0 parts by weight of said organic phosphite compound (B) per 100 parts by weight of said cellulose organic acid ester resin (A), said organic phosphite compound (B) being effective for minimizing discoloration of said cellulose organic acid ester resin (A) caused by heating the composition, while minimizing the decrease of the degree of polymerization of said cellulose organic acid ester resin (A).

4,209,341

CENTRIFUGE FOR SEPARATING MASSECUITE

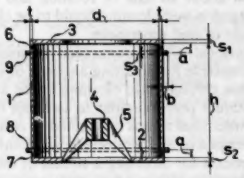
Heinz Houben, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,918

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738110

Int. Cl.² C13F 1/06

U.S. Cl. 127—19 23 Claims

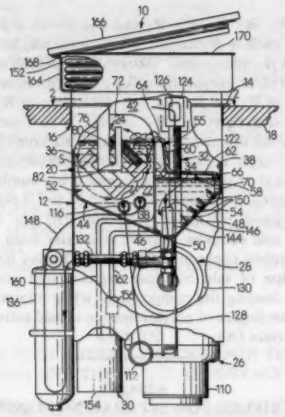


8. A centrifuge for separating massecuite into solid and liquid fractions, comprising a rotatable drum having a circumferential wall, a top wall and a bottom wall together bounding an inner chamber, said circumferential wall being unworked and having a small and uniform thickness, said circumferential wall being subjected in operation to tangential stresses in the regions of said top wall and bottom wall resulting from bending moments generated in the latter; sieve means in said inner chamber and arranged for separating massecuite into its constituent solid and liquid fractions; means for discharging the liquid fraction from said inner chamber and retaining the solid fraction in the latter, including two rows of holes one of which is arranged adjacent to said bottom wall whereas the other row is formed adjacent to said top wall; rings for reinforcing said drum, fitted on and cooperating with said circumferential wall but located only adjacent to said top and bottom walls, respectively, so as to reduce said tangential stresses in the regions of said top wall and bottom walls whereby at least a major part of said circumferential wall remains free of said reinforcing rings, and the entire circumferential wall remains having said small and uniform thickness; and means for rotating said drum.

4,209,342
DYNAMIC CLEANING METHOD AND APPARATUS FOR REMOVAL OF REMNANT MATERIAL

David B. Workman, Layton, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,923
Int. Cl.[2] B08B 7/04
U.S. Cl. 134—10 29 Claims



10. Apparatus for cleaning remnant particles or materials from a product, such as densely packaged electrical assemblies, comprising:

a receptacle for containing a cleaning liquid;

means mounted in said receptacle for dividing said receptacle into first and second reservoirs and providing a path of flow of excess liquid from said first to said second reservoir;

means mounted in said receptacle for holding a product for rotation about an axis of rotation and at least partially submerged in said cleaning liquid to be cleaned in said first reservoir of said receptacle;

first directional means connected in communication with said receptacle for directing a stream of a gaseous medium to bubble through said cleaning liquid and impinge upon said product perpendicular to said axis of rotation; and

second directional means connected in communication with said receptacle and positioned adjacent said first directional means for directing a stream of said cleaning liquid to impinge on said product and cause said bubbles to be driven into and through the product;

said first and second directional means being operable as said product is rotated to cause portions of said introduced gaseous medium and cleaning liquid to repeatedly flow into and out of said product in a single direction through said first reservoir so as to cause remnant material to be dislodged and removed from the product and to flow with excess fluid along said path from said first to said second reservoir of said receptacle.

4,209,343
METHOD FOR AIR TRANSPORT OF SANITIZING LIQUID TO A WAREWASHER

Buddy F. Lane, and Louis F. Fraula, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio

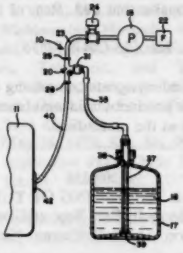
Division of Ser. No. 788,039, Apr. 15, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,931
Int. Cl.[2] B08B 9/00
U.S. Cl. 134—22 C 7 Claims

6. The method of dispensing a predetermined quantity of an air unstable chemical sanitizing liquid, such as an aqueous solution of sodium hypochlorite, into a predetermined quantity of rinse water for mixing with the water and for dispersing by spraying onto washed articles used in conjunction with food, to disinfect the articles, comprising the steps of:

(a) supplying the predetermined quantity of rinse water in a tank,

(b) directing air under a predetermined pressure along a confined path terminating at said tank,

(c) creating a reduced pressure below atmospheric at a portion along said confined path as a result of air flow past said portion,



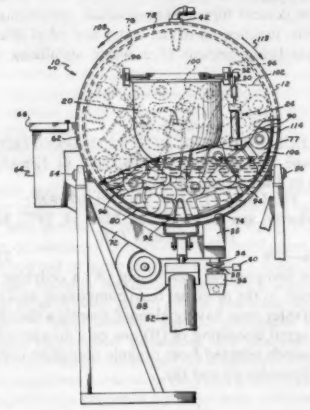
(d) conducting said aqueous solution from a supply thereof at ambient pressure to said reduced pressure portion by evacuation through a conduit and then transporting the solution from said portion to said tank by air flow through said path, and,

(e) maintaining the pressurized air in the confined path for a predetermined time period calculated to withdraw the predetermined quantity of aqueous solution from the supply and convey it to the tank.

4,209,344
DELABELING HOLLOW ARTICLES

Joseph F. Simon, Vernon, and William D. Wolf, Simsbury, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed May 16, 1977, Ser. No. 797,432
Int. Cl.[2] B08B 9/00, 7/00
U.S. Cl. 134—23 20 Claims



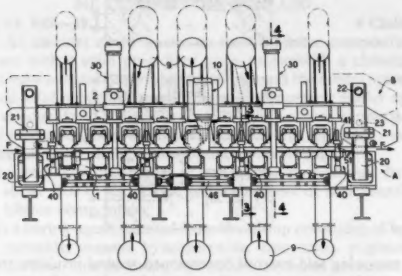
1. A delabeling method which comprises disposing a hollow thermoplastic article having a label adhesively bonded to its surface in a liquid and vigorously moving the article so that relative movement between the article surface and the liquid is obtained.

4,209,345

MACHINE FOR TREATING METAL SHEETS

Alfred M. J. Germain, Grande Synthe, France, assignor to Union Siderurgique Dunord et de l'Est de la France (USINOR), Paris, France

Filed Dec. 28, 1978, Ser. No. 974,014
Claims priority, application France, Dec. 30, 1977, 77 39833
Int. Cl.[2] B08B *3/04;* B05C *3/132*
U.S. Cl. 134—122 R 15 Claims



1. A machine for cooling metal sheets or like products, comprising:

a lower frame and an upper frame, each frame carrying a set of rollers and including means defining at least part of an enclosure in which enclosure a cooling liquid is to flow for cooling the metal sheets;

the upper frame being mounted to be vertically movable relative to the lower frame;

a plurality of hydraulic jacks connected to the upper frame for shifting the upper frame relative to the lower frame and for maintaining the upper frame in position at a selected height, in opposition to pressure forces tending to move the upper frame upwards during operation of the machine, and

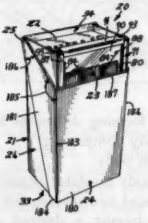
additional support means combined with an adjusting mechanism for precisely setting independently of said hydraulic jacks the position of the upper frame relative to the lower frame.

4,209,346

SOLAR ENERGY RECHARGER

Roger A. King, 5820 Colfax Ave., South, Minneapolis, Minn. 55419

Filed Feb. 8, 1979, Ser. No. 10,415
Int. Cl.[2] H01L *31/04;* H01M *10/44*
U.S. Cl. 136—89 PC 9 Claims



1. A solar panel including a plurality of solar cells mounted on the surface of a heat sink having heat conductive fins, a rechargeable battery, and means including a housing for mounting said panel and said battery so that heat is transferred between said sink and said battery.

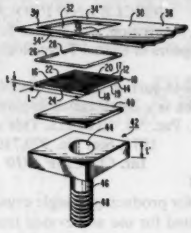
4. A power source including a housing, a generally flat solar cell panel mounted to comprise one face of said housing, and cover means pivotally mounted on said housing for movement between a first position, in which it substantially overlies said panel, and a second position, in which it supports said housing with said panel at a predetermined angle with respect to the horizontal.

4,209,347

MOUNTING FOR SOLAR CELL

Norman S. Klein, Freehold, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,190
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 PC 20 Claims



1. A solar cell construction comprising:

a wafer of semiconductor photosensitive material including a base region of one conductivity type and an emitter region of opposite conductivity type, said wafer having a coefficient of thermal expansion of a first value,

an electrode grid structure in electrical contact with said emitter region for conducting charge carriers from said emitter region to an edge of said wafer,

a first electrically conductive electrode in ohmic and thermal conductive contact with said base region over an area of about the same extent as said base region and having a coefficient of thermal expansion close in value to said first value,

a second electrically conductive electrode in ohmic and thermal conductive contact with said grid structure at said edge of said wafer and having a coefficient of thermal expansion close in value to said first value,

an electrical conductor in ohmic and thermal conductive contact with said second electrode and having a coefficient of thermal expansion substantially different than said first value, and

a block of electrically conductive heat sink material in ohmic and thermal conductive contact with said first electrode over said area for cooling said wafer and said electrodes, said block having a coefficient of thermal expansion substantially different than said first value.

17. A solar cell array comprising:

a plurality of like solar cell constructions, each construction comprising a wafer of semiconductor material having a radiation receiving surface and a back surface, said wafer being located between (a) one surface of a first conductive electrode on the back surface of the wafer and (b) a second electrode comprising a relatively highly conductive metal in electrical contact with the wafer and formed with an aperture therein aligned with the radiation receiving surface of the wafer so that radiation can pass through the aperture to said wafer, and a heat sink conductor having a surface at least equal in size to the first electrode and heat conductively coupled at said last mentioned surface with the other surface of said first conductive electrode;

first and second spaced apart heat sink members;

means thermally and electrically connecting a first group of said solar cell constructions via their respective heat sink conductors to said first heat sink member;

means thermally and electrically connecting a second, different group of said solar cell constuctions via their respective heat sink conductors to said second heat sink member; and

means electrically connecting the second electrode of each cell construction of said first group to the first electrode of a corresponding cell construction of the second group.

4,209,348

HEAT TREATED SUPERALLOY SINGLE CRYSTAL ARTICLE AND PROCESS

David N. Duhl, Newington, and Walter E. Olson, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 800,505, May 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 742,967, Nov. 17, 1976, Pat. No. 4,116,723. This application Dec. 18, 1978, Ser. No. 970,710

Int. Cl.[2] C22F 1/10

U.S. Cl. 148—3 **9 Claims**

8. A method for producing a single crystal nickel base superalloy article suited for use at elevated temperatures including the steps of:

a. providing an alloy consisting essentially of from about 8 to about 12% chromium, from about 4.5 to about 5.5% aluminum, from about 1 to about 2% titanium, from about 3 to about 5% tungsten, from about 10 to about 14% tantalum, from about 3 to about 7% cobalt, balance essentially nickel, said alloy being free from intential additions of carbon, boron and zirconium,

b. forming the alloy into a single crystal article, and

c. solution heat treating the article at a temperature of from about 2350° to about 2400° F., but below the incipient melting temperature so as to place the gamma prime phase into solid solution, and

d. aging the article at a temperature of from about 1600° to about 2000° F. to reprecipitate the gamma phase in a refined form.

4,209,349

METHOD FOR FORMING A NARROW DIMENSIONED MASK OPENING ON A SILICON BODY UTILIZING REACTIVE ION ETCHING

Irving T. Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,605

Int. Cl.[2] H01L 21/302, 21/76

U.S. Cl. 148—187 **20 Claims**

1. A method for forming a narrow dimensioned mask opening on a silicon body for subsequent processing comprising:

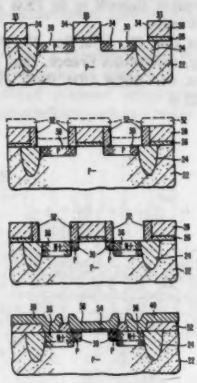
providing a silicon body;

forming on said body first insulator regions having substantially horizontal surfaces and substantially vertical surfaces;

forming a second insulator layer composed of a material different from said first insulator on both said substantially horizontal surfaces and said substantially vertical surfaces;

reactive ion etching said second layer to substantially remove said horizontal layer and to provide a narrow dimensioned second insulator region on said silicon body;

thermally oxidizing the exposed surfaces of said silicon body; and



removing said narrow dimensioned second insulator region to form said narrow dimensioned mask opening.

4,209,350

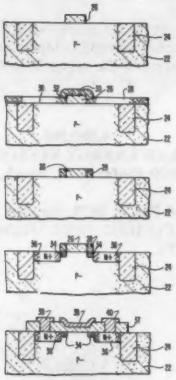
METHOD FOR FORMING DIFFUSIONS HAVING NARROW DIMENSIONS UTILIZING REACTIVE ION ETCHING

Irving T. Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,599

Int. Cl.[2] H01L 21/302, 21/225, 21/76

U.S. Cl. 148—188 **18 Claims**



1. A method for forming diffusions having narrow dimensions in a silicon body comprising:

providing a silicon body;

forming on said body insulator regions having substantially horizontal surfaces and substantially vertical surfaces;

forming a layer having a desired dopant concentration therein on both said substantially horizontal surfaces and said substantially vertical surfaces;

reactive ion etching said layer to substantially remove the said layer from said horizontal surfaces and to provide a narrow dimensioned layer on the said substantially vertical surfaces; and

heating said body at suitable temperature to cause said dop-

ant to diffuse into said body to form said diffusions having narrow dimensions therein.

4,209,351
AMBIENT CURED SMOKELESS LINER/INHIBITOR FOR PROPELLANTS

Everette M. Pierce, Somerville, and Henry C. Allen, Decatur, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 5, 1978, Ser. No. 912,810
Int. Cl.[2] C06B *45/10*; F42B *1/00*
U.S. Cl. 149—19.1 **4 Claims**

1. An ambient cured smokeless liner/inhibitor composition for use with a solid propellant grain to establish a chemical bond between said liner/inhibitor binder and the binder system of said solid propellant grain, said solid propellant binder system selected from the group consisting of hydroxy terminated polybutadiene, polysulfide, polyurethane, and polyester, said smokeless liner/inhibitor composition comprising:

(i) a liner/inhibitor binder of polysulfide in an amount from about 19.0 to about 70.0 weight percent of said liner/inhibitor composition;

(ii) a curing agent selected from the group consisting of lead peroxide, cumene hydroperoxide, zinc oxide, p-quinone dioxime, zinc peroxide, toluene diisocyanate, hexamethylene diisocyanate, and isophorone diiscyanate in an amount from about 1.0 to about 10.0 weight percent of said liner-/inhibitor composition;

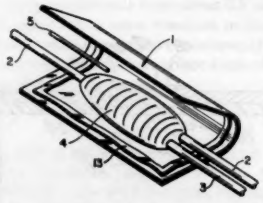
(iii) a cure catalyst selected from the members of the goup of catalysts consisting of inorganic cobalt salts, furfural, chromium octoate, ferric acetyl acetonate and triphenyl bismuth in an amount from about 0.1 to about 1.0 weight percent of said liner/inhibitor composition; and

(iv) a cool burning oxidizer selected from the group consisting of oxamide and nitroguanidine in an amount from about 10.0 to about 70.0 weight percent of said liner/inhibitor composition.

4,209,352
METHODS FOR SEALING CLOSURE MEMBERS TO SUBSTRATES

Stephen H. Diaz, Los Altos Hills, and David A. Horsma, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 21, 1978, Ser. No. 934,715
Int. Cl.[2] H01R *3/00*
U.S. Cl. 156—49 **39 Claims**



1. A method for enclosing a splice comprising at least two cables and a joint therebetween, comprising the steps of:

(a) wrapping an inflatable closure member having sealing material pre-coated on selected portions thereof around the splice so that parts of the closure member overlap, the parts of the closure member adjacent the cables being flexible, the closure member being so constructed and wrapped that there is sealing material between the closure member and the cables and between overlapping parts of the closure member which are adjacent the cables;

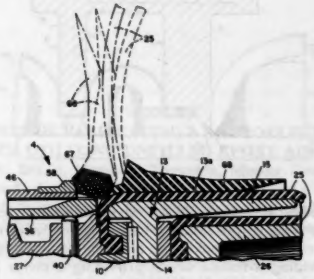
(b) placing restraining means around the inflatable closure member; and

(c) inflating the inflatable closure member so that it is pressed against the cables with sealing material therebetween, thereby creating a continuous seal between the cables and the closure member.

4,209,353
PROCESS AND APPARATUS FOR MAKING A COMBINATION BEAD WIRE AND BEAD ZONE FILLER FOR A VEHICLE TIRE

Bruno Colombani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 4, 1978, Ser. No. 893,392
Claims priority, application Italy, Apr. 13, 1977, 22380 A/77
Int. Cl.[2] B29H *17/32*
U.S. Cl. 156—136 **6 Claims**



2. A process for preparing an assembly of a bead wire core and an annular filler element for the bead zone of a vehicle tire comprising:

supporting a strip of elastomeric material suited for forming said annular filler element on a substantially cylindrical supporting surface for obtaining a substantially tubular form, said tubular form having a first surface beginning at a first end extending inwardly towards a second end of said tubular form and then upwardly to the exterior surface of said tubular form forming a second surface for communicating with two surfaces of a bead core;

disposing a polygonal bead core having a surface comprising a plurality of adjacent planar surfaces on a substantially cylindrical seat adjacent to and coaxial with said first end of said tubular form;

positioning said bead core until an edge formed by two adjacent surfaces of said bead core is in communication with said first end of said tubular form below the beginning edge of said inwardly extending surface whereby a wedge shaped space is formed bounded by a surface of said bead core, said supporting surface, and said first end of said tubular form; and

applying a force to the interior of said tubular form for forcing said second end of said tubular form into a vertical position above said first end and forcing the portion of said first end defining a boundary of said wedge shaped space into said space until said first and second surfaces of said first end communicate with two adjacent surfaces of said bead core thereby providing an annular form positioned in a predetermined relationship with said bead core without the aid of a positioning flange.

4,209,354

METHOD OF MAKING AN APPLIQUE ARTICLE

Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co. Ltd., Amagasaki, Japan and Dimension Weld Internal Corporation, Stamford, Conn.

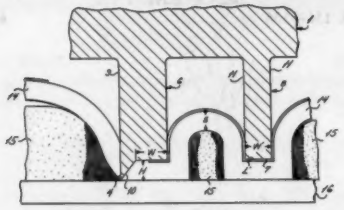
Continuation of Ser. No. 646,960, Jan. 7, 1976, and a continuation-in-part of Ser. No. 112,403, Feb. 3, 1971, abandoned, which is a continuation of Ser. No. 792,719, Jan. 21, 1969, abandoned, said Ser. No. 646,960, is a continuation-in-part of Ser. No. 393,791, Sep. 4, 1973, abandoned, which is a continuation of Ser. No. 113,088, Feb. 5, 1971, abandoned, said Ser. No. 792,719, and Ser. No. 113,088, each is a continuation-in-part of Ser. No. 662,962, Aug. 24, 1967, abandoned. This application Feb. 2, 1977, Ser. No. 764,917

Claims priority, application Japan, Dec. 19, 1966, 41-83085; Dec. 19, 1966, 41-115532[U]; Dec. 19, 1966, 41-115533[U]; Dec. 19, 1966, 41-115535[U]

The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl.[2] B32B *31/00*

U.S. Cl. 156—219 3 Claims



1. A method of making an adhesive applique article, comprising the steps of providing a base layer of sheet material; providing an adhesive backing on only one surface of said base layer; providing a release layer; providing a cover layer of sheet material having a design surface with an outer contour line, a narrow outer bonding zone along said outer contour line and at least one inner bonding zone spaced inwardly from said outer bonding zone; further providing an intermediate layer of resiliently compressible latently adhesive material having spaces filled with a gaseous medium; forming a sandwich composed of said release layer, said base layer superimposed on said release layer with said adhesive backing thereof in contact with said release layer; said intermediate layer superimposed with one surface thereof on the other surface of said base layer and said cover layer superimposed on the other surface of said intermediate layer; and pressing said cover layer within said outer and inner bonding zones against said intermediate layer and said base layer while activating only said latently adhesive material and thereby bonding said cover layer by said latently adhesive material to said other surface of said base layer in said outer and inner bonding zones, and severing at least said cover layer and intermediate layer and base layer along said outer contour line, the presence of said intermediate layer resulting in formation of a cushion between said base layer and said cover layer in the area surrounded by said outer bonding zone upon bonding of said cover layer to said base layer.

4,209,355

MANUFACTURE OF BUMPED COMPOSITE TAPE FOR AUTOMATIC GANG BONDING OF SEMICONDUCTOR DEVICES

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 26, 1978, Ser. No. 921,643

Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—630 9 Claims

1. A process for fabricating a composite tape suitable for assembling semiconductor chip devices, said tape comprising an insulating strip having edge located indexing and transporting holes, a succession of apertures indexed relative to said edge located holes, and a plurality of conductive members, each conductive member being secured at one end to said insulating strip and having a free end extended in cantilever fashion into said aperture, the free ends of said plurality of conductive members being held in relative positions that permit simultaneous attachment to said semiconductor chip, said process comprising the steps of:

preparing a first strip of insulating material to create edge located holes for indexing and transporting said first strip and a succession of apertures located in spaced relation along said first strip, said apertures being indexed in predetermined relation with said edge located holes;

preparing a second strip of conductive material having a width substantially equal to the width of said first strip to create edge located holes that are capable of registry with said edge located holes in said first strip;

etching said second strip to create said plurality of conductive members and halting said etching before said second strip is completely penetrated, thereby leaving said plurality of conductive members joined together by a thinned web of metal;

laminating said first and second strips together using said edge located holes to index said first and second strips with respect to each other to create a composite strip; and

etching said composite to remove said thinned web, thereby leaving said plurality of conductive members on said insulation strip and extending in cantilever fashion into said aperture.

4,209,356

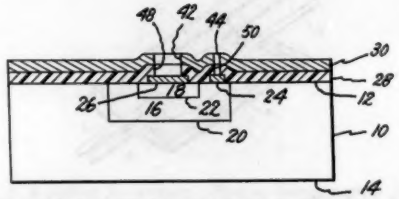
SELECTIVE ETCHING OF POLYMERIC MATERIALS EMBODYING SILICONES VIA REACTOR PLASMAS

Leonard Stein, Dewitt, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,406

Int. Cl.[2] H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*

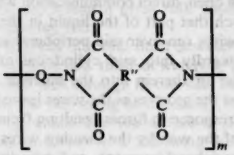
U.S. Cl. 156—643 16 Claims



1. A method for the selective chemical etching of a cured layer of a silicone-polyimide copolymer material disposed on a surface of a body to open windows therein to expose selected surface portions of the surface thereat including the process steps of:

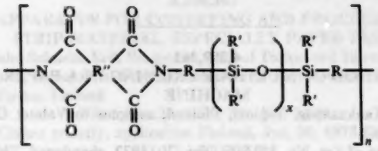
(a) forming a layer of a cured silicone-polyimide copolymer material on a processed body of semiconductor material, the copolymer material consisting of a reaction product of a silicon-free organic diamine, an organic tetracarboxylic dianhydride and a polysiloxane which when cured has the recurring structural units of the formula:

I.



with from 5 to 40 mol percent intercondensed structural units of the formula:

II.



wherein

R is a divalent hydrocarbon radical;

R′ is a monovalent hydrocarbon radical;

R″ is a tetravalent organic radical;

Q is a divalent silicon-free organic radical which is the residue of an organic diamine;

x is an integer having a value of 1–4, and

m and n are integers greater than 1;

(b) depositing a layer of silicon of a predetermined thickness on the layer of silicone-polyimide copolymer material;

(c) depositing a photoresist material on the layer of silicon;

(d) processing the layer of photoresist material to open one or more windows therein to expose a selected surface area of the layer of silicon thereat;

(e) chemically etching selectively the exposed silicon in a plasma of CF_4/4% oxygen at about 100 watts RF power at a pressure range of from about 0.3 torr to about 0.5 torr to open one or more windows therein, aligned with the respective windows in the layer of photoresist, to expose selected surface areas of the layer of silicone-polyimide copolymer material thereat, and

(f) chemically etching the layer of silicone-polyimide copolymer material selectively in an oxygen plasma at a range of RF power from about 200 watts to about 400 watts at a range of pressure from about 0.8 torr to about 2.0 torr to open one or more windows in the copolymer layer, aligned with the respective windows of the layer of silicon, to expose the selected surface areas of the surface of the processed body thereat.

4,209,357

PLASMA REACTOR APPARATUS

Georges J. Gorin, Emeryville, and Josef T. Hoog, Novato, both of Calif., assignors to Tegal Corporation, Novato, Calif.

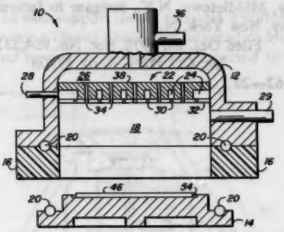
Filed May 18, 1979, Ser. No. 40,604

Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—643 **25 Claims**

1. A gas plasma reactor apparatus which comprises: first and second electrodes configured to bound a reaction volume which is adapted to be evacuated, said first electrode having a first array of orifices for the ingress of gaseous reactants to said reaction volume and a second array of orifices for the egress of gaseous reaction products from said reaction volume.

21. A process for the gas plasma etching of a workpiece which comprises the step of: positioning the workpiece between substantially parallel electrodes bounding a reaction volume; injecting gaseous reactants from a manifold integral with one of said electrodes into said reaction volume; applying radio frequency power to said electrodes to establish a field therebetween and to form a plasma of said reactants for etching said workpiece; exhausting gaseous reaction products of said etching through said manifold.



4,209,358

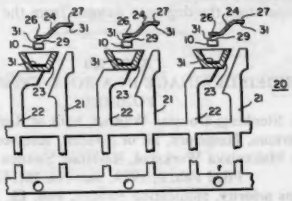
METHOD OF FABRICATING A MICROELECTRONIC DEVICE UTILIZING UNFILLED EPOXY ADHESIVE

Daniel A. DiLeo, Hopewell Township, Mercer County, N.J.; Samuel E. Kurtz, Muhlenberg Township, Berks County, and John J. Svitak, Lower Makefield Township, Bucks County, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,411

Int. Cl.[2] H01L *21/603*

U.S. Cl. 156—293 **4 Claims**



4. A method of fabricating a light emitting diode assembly (LED) having a light emitting diode bonded within a cup mounted on a first terminal, with an electrically conductive lead connecting the light emitting diode to a second terminal which is spaced from the first terminal, the method comprising:

gold coating all surfaces to be bonded;

depositing an unfilled epoxy in the cup;

placing the LED in the epoxy;

coating selected portions of the electrically conductive lead with unfilled epoxy;

clamping the epoxy coated portions of the electrically conductive lead into intimate contact with the LED and the second terminal with a predetermined force sufficient to provide an electrical connection therebetween;

subjecting the assembly to an elevated temperature for a predetermined period of time to cure the epoxy; and

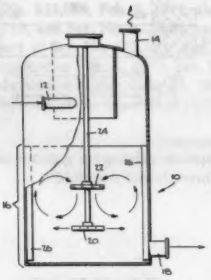
removing the clamping force at the end of said predetermined time.

4,209,359

PROCESS FOR REMOVING RESIDUAL OXYGEN FROM OXYGEN-BLEACHED PULP

Anil Sethy, Middletown, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,232
Int. Cl.[2] D21C *9/10, 11/06*
U.S. Cl. 162—29 **7 Claims**



1. A process for removing a significant portion of the residual oxygen from an aqueous wood fiber slurry that has been bleached with oxygen and contains a gross amount of oxygen, said process comprising the steps:

(a) grossly separating the oxygen from the bleached slurry to leave not more than 350 parts per million by weight of residual oxygen in the slurry;

(b) thereafter agitating the slurry in a vessel in which the slurry has an average height during agitation denominated H, with a radial-flow impeller of diameter D that is at a depth below the average slurry height during agitation, thereby inducing a substantially radially flow of the slurry in the vessel and causing degassing of a significant portion of the residual oxygen, said vessel providing a residence time for the slurry of from 15 seconds to 10 minutes and having substantially vertical baffles to prevent vortex formation; and

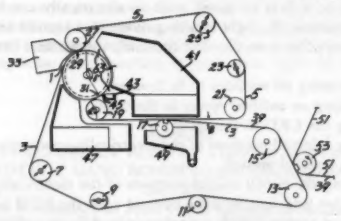
(c) separating the degassed oxygen from the slurry.

4,209,360

TWO-SIDED DRAINAGE IN A ROLL-TYPE TWIN-WIRE FORMER

Erik G. Stenberg; Douglas Wahren, both of Karlstad, and Carl Zotterman, Hammarö, all of Sweden, assignors to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 9, 1979, Ser. No. 10,742
Claims priority, application Sweden, Feb. 15, 1978, 7800775
Int. Cl.[2] D21F *1/10, 11/00, 1/40*
U.S. Cl. 162—203 **30 Claims**



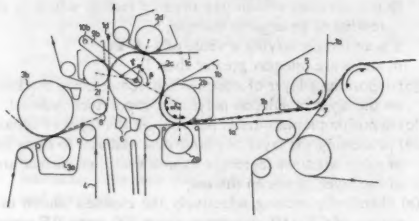
1. In a method of producing a web from a jet of stock injected between a pair of tensioned forming wires run around a peripheral segment of a forming cylinder having multiple circumferential grooves formed in the periphery thereof, the improvement comprising the steps of maintaining the cylinder grooves and a zone outside said wires and adjoining said peripheral segment in open, direct communication with the ambient atmosphere such that part of the liquid in the web drains outwardly as the wires run over said peripheral segment, and part is pressed inwardly into said cylindrical grooves with displacement of the air therein into the ambient atmosphere and is expelled from the grooves as the wires leave the forming cylinder, solely in response to forces resulting from translation and compression of the web by the forming wires as they are run around said peripheral segment, and adjusting the wire speed and tension, and the thickness of the injected jet in relation to the radius of the forming cylinder to achieve a ratio of inwardly drained liquid to outwardly drained liquid that will result in the production of a web without pronounced two-sidedness.

4,209,361

METHOD OF MULTI-NIP PRESSING IN A PAPER MACHINE

Matti Kankaanpaa, Tapiola, Finland, assignor to Valmet Oy, Finland

Division of Ser. No. 310,805, Nov. 30, 1972, abandoned. This application Apr. 25, 1977, Ser. No. 790,209
Int. Cl.[2] D21F *3/04*
U.S. Cl. 162—205 **4 Claims**



1. A method of paper machine press section for dewatering a wet paper web by passing the web while avoiding its stretching through at least three nips of the press section which nips dewater the web, the web being at all times supported by the surface of a felt or a roll, comprising the following steps:

detaching the web from a paper machine forming wire by means of a first felt loop and pick-up suction roll operating within said first felt loop and adhering the web onto the lower surface of said first felt loop;

transferring the web adherent to the lower surface of said first felt loop and without any substantial support from below to the first dewatering press nip of the press section, which nip is formed by and between a first water-receiving roll which is a suction roll and a second water-receiving roll;

passing a second felt loop into the first dewatering press nip in such a way that said second felt comes into contact with the web only in the area of said first nip;

pressing the web in the first dewatering press nip between the first felt and the second felt and thus dewatering the web simultaneously in two directions through both sides of the web;

detaching the web from the second felt;

adhering the web by suction on the first felt, wrapping the first water-receiving roll on a sector following the first nip;

transferring the web to a second dewatering press nip formed by the first water-receiving roll and by a smooth surface plain roll;

pressing the web in said second nip so as to dewater the web through its one side facing the first felt;

detaching the web from the first felt and adhering the web onto the surface of said plain-press roll;

transferring the web adhered on the surface of said plain-press roll, to a third dewatering nip formed by said plain-press roll and a fourth press roll, which fourth roll is a water-receiving roll;

passing a third felt into said third dewatering nip and pressing the web in said third dewatering press nip so as to dewater the web through its one side facing the third felt;

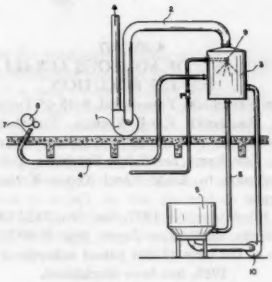
transferring the web being continuously, beginning from the second nip, adhered to the surface of said plain-press roll after said third nip to a following web processing step comprising the step of smoothing the web in a fourth nip formed by said smooth surface plain roll and a further plain-press roll with a soft covering.

4,209,362

APPARATUS FOR CONVEYING AND PROCESSING STRIP MATERIAL, ESPECIALLY PAPER TRIM

Jouko Salmela; Erik Bergmann, both of Turku, and Tauno Heikkila, Lieto, all of Finland, assignors to Teollisuusmittaus OY, Turku, Finland

Filed Jan. 29, 1979, Ser. No. 7,609
Claims priority, application Finland, Jan. 30, 1978, 780281
Int. Cl.[2] D21C *5/02*
U.S. Cl. 162—264 **4 Claims**



1. An apparatus for collecting, transporting and processing paper strip material, comprising:

a separating tank;

a suction conduit connected to an upper portion of said tank and provided with a fan for inducing a subatmospheric pressure in said tank and drawing transport air therethrough;

a transport duct connected to said tank at one end of said duct and opening at its other end at a location proximal to a source of paper strip material whereby said paper strip material is conveyed by suction through said duct into said tank;

a mixing vessel containing paper pulp;

pump means connected between said vessel and said tank for circulating pulp to said tank to terminate the movement of said material into said tank;

a pipe leading from a bottom portion of said tank for carrying pulp entraining said material to said vessel; and

means forming a liquid seal at an end of said pipe remote from said tank.

4,209,363

SOLAR STILL APPARATUS

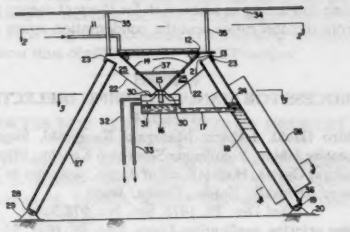
James L. Ramer, 401 W. Newhall Ave., Waukesha, Wis. 53186

Filed Feb. 15, 1978, Ser. No. 878,118
Int. Cl.[2] C02B *1/04*; F24J *3/02*
U.S. Cl. 202—180 **4 Claims**

1. In a solar still apparatus having distilland supply means for providing a supply of liquid distilland, solar energy collecting means for heating said distilland to form a vapor thereform, condensing means for condensing said vapor to form a distillate liquid, and a plurality of support means to support said apparatus above a surface, the improvement wherein:

said condensing means includes wall means defining a chamber,

at least one of said support means includes a hollow column means having a closed lower end adapted to engage said surface and having an upper end connected to said wall



means, said upper end being open to provide communication between the interior of said hollow column means and the interior of said chamber, and

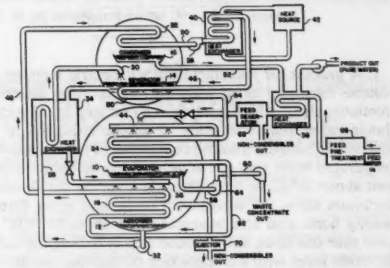
said solar energy collecting means is mounted on said hollow column means for heating the same whereby distilland liquid within the upper end of said hollow column means is vaporized and said vapor is introduced into said chamber for condensation therein.

4,209,364

PROCESS OF WATER RECOVERY AND REMOVAL

Herbert F. Rothschild, 1805 NW. 202nd, Seattle, Wash. 98177

Filed Apr. 10, 1974, Ser. No. 459,570
Int. Cl.[2] C02B *1/04*
U.S. Cl. 203—11 **1 Claim**



1. A process for recovering relatively pure water from aqueous feed solutions, comprising:

(1) evaporating the feed solution under vacuum in an evaporation zone as water vapor, producing a more concentrated feed solution;

(2) absorbing substantially all of the vaporized water in a relatively concentrated absorbent/water solution in an abosrption zone, the absorption producing concurrent generation of heat and a more dilute absorbent/water solution;

(3) removing the heat released in the absorption zone;

(4) passing the more dilute absorbent/water solution at a higher pressure than the absorption zone to a generation zone maintained at the higher pressure;

(5) applying heat to the more dilute absorbent/water solution in the generation zone to evaporate fresh water vapor therefrom, producing thereby a relatively concentrated absorbent/water solution;

(6) condensing the water vapor from (5) in a condensation

zone by heat removal for discharge as relatively pure water; and

(7) providing a common stream of heat transfer liquid passing through a heat exchanger in the generation zone, to and through a heat exchanger in the absorption zone and to and through a heat exchanger in the condensation zone, the heat transfer fluid providing thermal energy for water evaporation in the evaporation zone and the generation zone and acting as a heat sink for thermal energy removal from the absorption and the condensation zones.

4,209,365

PROCESS FOR MANUFACTURING DIELECTRIC MEMBER

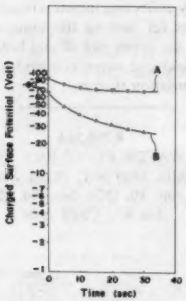
Yoshihiro Ozaki, Isehara; Masayuki Kuniyoshi, Sagamihara; Takanobu Ishido, Yokohama; Shuichiro Kaneko, Mitaka, and Yasukuni Omata, Hachioji, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1978, Ser. No. 974,524

Claims priority, application Japan, Dec. 29, 1977, 52-157682; Dec. 29, 1977, 52-157683

Int. Cl.² C25D *11/08*

U.S. Cl. 204—14 N **5 Claims**



1. A process for manufacturing a dielectric member having volume resistivity of at least 10^{11} Ω·cm from aluminum or aluminum alloy, which comprises a first step of subjecting the aluminum or aluminum alloy to anodic oxidation in a non-aqueous electrolytic solution containing an organic solvent and dehydrated boric acid and at an electrolytic temperature of at least about 30° C. to form an oxide layer on the aluminum or aluminum alloy, the dehydrated boric acid being formed by heating boric acid at a temperature of about 80°±10° C. for more than one hour, and a second step of buffing the surface of the oxide layer with a composition containing insulative abrasive grains and insulative binding material.

4,209,366

PROCESS FOR IMPROVING THE SURFACE CLEANLINESS OF SHEET STEEL

Vincent M. Leroy, and Joseph H. Richelmi, both of Liege, Belgium, assignors to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Jun. 30, 1978, Ser. No. 920,799

Claims priority, application Belgium, Jul. 1, 1977, 856402

Int. Cl.² C25D *9/10, 5/50*

U.S. Cl. 204—27 **7 Claims**

1. A process for improving the surface cleanliness of sheet steel for stamping, comprising:

(a) winding the sheet steel into coils with closely-packed turns;

(b) before or during the winding of the steel sheet into coils with closely-packed turns as set out in step (a), and prior to subsequent annealing, depositing a porous silicate on the sheet steel and applying to the sheet steel which is contaminated with carbon-containing material as substance comprising an agent capable of reacting with carbon present on the surface of the sheet as a contaminant so as to form a volatile carbon compound with said carbon contaminate during subsequent annealing of the closely-packed coils of the sheet steel, said silicate thereafter gelling, holding said agent to react with the carbon;

(c) annealing the closely-packed coils of the sheet steel treated as in step (b) whereby the carbon contaminate is converted into a volatile carbon compound by reaction with said agent and is removed, thereby producing a sheet steel having a surface of enhanced cleanliness in being essentially carbon-free; and

(d) subjecting the sheet steel having a carbon-free surface obtained in step (c) to stamping operations.

4,209,367

ELECTROLYSIS OF AQUEOUS ALKALI METAL HALIDE SOLUTION

Maomi Seko; Yasumichi Yamakoshi, both of Tokyo; Hirotsugu Miyauchi, Kawasaki; Kyoji Kimoto, Yokohama; Toshioki Hane, Kawasaki; Mitsunobu Fukumoto, Yokohama; Itaru Watanabe, Yokohama, and Sakae Tsushima, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1977, Ser. No. 782,713

Claims priority, application Japan, Apr. 5, 1976, 51-37919

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.² C25B *13/05, 1/46*

U.S. Cl. 204—98 **27 Claims**

1. A process for the electrolysis of an aqueous alkali metal halide solution which comprises passing an electric current through said solution in an electrolytic cell divided into an anode chamber and a cathode chamber while supplying said aqueous solution to the anode chamber, the anode and cathode chambers being divided by a cation exchange membrane which is a fluorocarbon polymer film comprising (a) a fluorocarbon polymer containing pendant carboxylic acid groups of the formula:

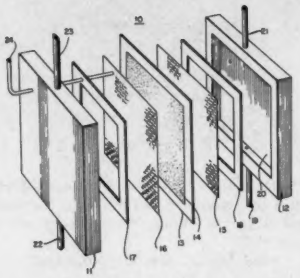
$$-\mathrm{OCFCOOM}$$
$$\quad\quad\quad

4,209,368

PRODUCTION OF HALOGENS BY ELECTROLYSIS OF ALKALI METAL HALIDES IN A CELL HAVING CATALYTIC ELECTRODES BONDED TO THE SURFACE OF A POROUS MEMBRANE/SEPARATOR

Thomas G. Coker, Waltham, and Anthony B. La Conti, Lynnfield, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Aug. 7, 1978, Ser. No. 931,413
Int. Cl.[2] C25B 1/34, 9/04, 13/08, 11/08
U.S. Cl. 204—98 6 Claims



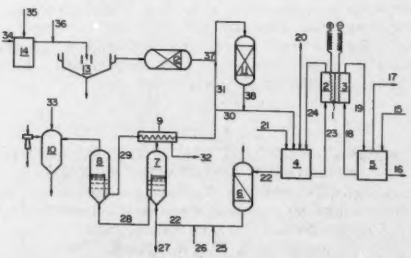
1. A process for generating halogens and alkali metal hydroxide which comprises electrolyzing an aqueous alkali metal halide between a pair of electrodes separated by a porous, hydraulically permeable, non-fibrous, non-metallic membrane, at least one of the electrodes comprising an electrochemically active layer bonded to the membrane to provide a unitary gas and electrolyte permeable catalytic electrode and membrane structure, an electron current conducting structure having a surface resistant to attack by the electrolyte to which it is exposed and in contact with the electrode, applying a potential to the current conducting structure in contact with the electrode.

4,209,369

PROCESS FOR ELECTROLYSIS OF SODIUM CHLORIDE BY USE OF CATION EXCHANGE MEMBRANE

Maomi Seko, Tokyo; Shinsaku Ogawa, and Reiji Takemura, both of Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1978, Ser. No. 969,272
Claims priority, application Japan, Dec. 19, 1977, 52-151663
Int. Cl.[2] C25B 1/16, 1/26
U.S. Cl. 204—98 10 Claims



1. In a process for electrolysis of an aqueous sodium chloride solution in an electrolytic cell divided into an anode chamber and a cathode chamber by a cation exchange membrane between the anode and the cathode by carrying out electrolysis at 50° C. or higher while feeding purified well brine or dilute aqueous solution thereof as the feed sodium chloride solution into the anode chamber, the improvement which comprises using a cation exchange membrane having 50 g. or more of water permeability per current passage of one Faraday and operating the electrolysis by withdrawing a part of the dilute aqueous sodium chloride solution in the anode chamber which is depleted in sodium chloride concentration to a value in the range of from 100 to 250 g/liter, concentrating the solution withdrawn to a concentration ratio in the range of from 1.05 to 3.00, and returning the recovered concentrated sodium chloride solution thus obtained to the anode chamber.

4,209,370

PROCESS FOR ELECTROLYSIS OF BRINE BY MERCURY CATHODES

Eduardo D. Nogueira, Avda. Mediterraneo No. 47, Madrid (30); Luis A. S. Infanzon, Avid. Valladolid No. 73 trip., Madrid (8), and Enrique H. Tezanos, Aniceto Marinas No. 110-6A, Madrid (8), all of Spain

Filed Oct. 7, 1977, Ser. No. 840,224
Claims priority, application Spain, Oct. 8, 1976, 452.238
Int. Cl.[2] C25B 1/38, 1/40, 9/00
U.S. Cl. 204—99 5 Claims

1. A process for the electrolysis of brine by mercury cathode, said process comprising:

providing an electrolytic cell;

dividing said cell into an anolyte compartment for the discharge of chlorine and a catholyte compartment by positioning a membrane in said cell;

providing said membrane with porous means impervious to passage of mercury and electrolyte therethrough and previous to passage of ions therethrough for preventing short circuits between anode and cathode poles of said cell;

employing film of mercury as the cathode;

continuously flowing said film of mercury across said membrane; and

using said film of mercury to continuously remove from said cell, as an amalgam, metal deposited therein.

4,209,371

METHOD OF PROMOTING ESSENTIALLY COMPLETE VINYL POLYMERIZATION OF ULTRAVIOLET-CURABLE COMPOSITIONS

George A. Lee, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

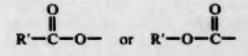
Filed Mar. 1, 1979, Ser. No. 16,714
Int. Cl.[2] C08F 2/46, 4/00
U.S. Cl. 204—159.22 8 Claims

1. In a method of essentially completely polymerizing UV-curable vinyl compositions containing sterically encumbered monofunctional acrylate diluents, the improvement comprising:

(a) admixing with the composition at least about 1 weight percent, based upon the weight of the composition, of a polyester additive of the formula

R—M—R (I)

where each R can be the same or different and is



where R′ is a C_1–C_{10} aliphatic, C_4–C_7 alicyclic or an aryl radical, R′ having no groups interferingly reactive with the UV-curing mechanism and M is a divalent aliphatic, alicyclic or aryl radical, M having no groups interferingly reactive with the UV-curing mechanism, with the provisoes that R′ and M are not simultaneously aryl and the molecular weight of I is not in excess of about 1,000, and

(b) exposing the admixture of (a) to a sufficient amount of "electromagnetic radiation having wavelengths of above about 2,000 Angstrom units" to essentially completely polymerize the vinyl components of the composition.

4,209,372
ALKALINE AGAROSSE GEL ELECTROPHORESIS OF HEMOGLOBINS

Barry I. Bluestein, Lansing, and Cyrus A. Lepp, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,462
Int. Cl.[2] G01N *33/16, 27/26*
U.S. Cl. 204—180 G **20 Claims**

1. In a method for discretely separating the common hemoglobin variants A, A_2, F, S, and C by electrophoresis, the improvement which comprises employing:

A. an agarose gel having a wet thickness of from about 0.1 to about 0.5 mm,

B. a gel buffer comprising tris(hydroxymethyl)aminomethane, ethylenediaminetetraacetic acid, and boric acid, and having an ionic strength of from about 0.065 to about 0.1 and a pH of from about 8.7 to about 9.1,

C. a well buffer comprising diethylbarbiturate and ethylenediaminetetraacetate and having an ionic strength of from about 0.01 to about 0.11 and a pH of from about 8.0 to about 9.5, and

D. a potential of from about 150 to about 300 volts.

4,209,373
ACIDIC AGAR GEL ELECTROCHROMATOGRAPHY OF HEMOGLOBINS

Barry I. Bluestein, Lansing; Cyrus A. Lepp, Corning, and Robert D. Mason, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,471
Int. Cl.[2] G01N *33/16, 27/26*
U.S. Cl. 204—180 G **23 Claims**

1. In a method for discretely separating the common hemoglobin variants A, A_2, F, S, and C by electrochromatography on an agar gel, under acidic conditions utilizing citrate gel and well buffers, each of which has a citrate concentration of approximately 0.05 M and a pH of approximately 6.0, and a potential of 50–90 volts, the improvement which comprises employing:

A. an agar gel having a wet thickness of from about 0.1 to about 0.5 mm. and

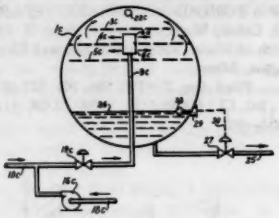
B. a potential of from about 60 to about 110 volts.

4,209,374
PLURAL PARALLEL STAGE DESALTING AND DEHYDRATION

Robert B. Martin, Spring, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 867,417, Jan. 6, 1978, which is a continuation-in-part of Ser. No. 784,392, Apr. 4, 1977, Pat. No. 4,149,958. This application Nov. 14, 1978, Ser. No. 960,800
Int. Cl.[2] B03C *5/00;* **C10G** *33/02*
U.S. Cl. 204—188 **8 Claims**

1. A process for desalting a petroleum oil comprising emulsifying said petroleum oil with water to form an oil-continuous emulsion containing a dispersed aqueous phase, passing said emulsion horizontally in a plurality of parallel stages between horizontally disposed permeable electrodes in vertically spaced relationship contained in a single vessel, said stages being hydraulically substantially independent, but with no impermeable barriers between them, whereby said emulsion in each stage is subjected to an electric field provided by adjacent electrodes, the electric fields in the several stages being superimposed, and the suspended droplets of the dispersed aqueous phase are coalesced, thereby breaking the emulsion, allowing de-emulsified water to pass downwardly through said electrodes to the lower portion of the vessel, allowing the treated petroleum oil to rise and pass between the edges of the upper electrode and the wall of the vessel, and withdrawing the

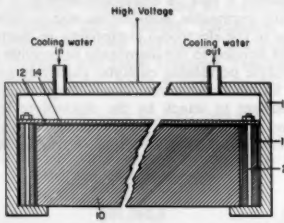


treated petroleum oil from the upper portion of said vessel and water from the lower portion of said vessel.

4,209,375
SPUTTER TARGET

Willard G. Gates, Kansas City, Mo., and Gerald J. Hale, Overland Park, Kans., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 2, 1979, Ser. No. 63,008
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 R **8 Claims**



1. A vacuum sputter deposition process for depositing material from a sputter target onto a substrate at temperatures as high as 700° C. comprising: (1) forming said target comprising a layer of sputterable material having thickness T and a thermal expansivity A; a metal layer having a thickness about 0.06 T and a thermal expansivity about A; and a metallic layer intermediate and metallurgically bonded to said sputterable layer and said metal layer and having a melting point greater than 700° C. and a thickness about 0.02T; and (2) sputtering said layer of sputterable material.

7. A spall-resistant sputter target for use in vacuum sputter deposition at temperatures as high at 700° C. comprising: a sputterable layer of titanium diboride, a support layer of tantalum, a layer of an alloy comprising 70% gold, 8% palladium, and 22% nickel intermediate and metallurgically bonding together said first and second layers.

4,209,376
APPARATUS FOR INTEGRATING ELECTROLYTIC CORROSION ASSOCIATED VOLTAGE

Yoichi Arita, Toyonaka; Shinko Yada, Katano, and Ko Onishi, Nishinomiya, all of Japan, assignors to Sanyo Electric Co., Ltd. and Osaka Gas Co., Ltd., both of, Japan

Filed May 1, 1975, Ser. No. 573,789
Claims priority, application Japan, May 8, 1974, 49-52663[U]; Oct. 7, 1974, 49-115960; Oct. 7, 1974, 49-115961
Int. Cl.[2] G01N *27/46, 27/30*
U.S. Cl. 204—195 C **17 Claims**

1. An apparatus for integrating a voltage associated with electrolytic corrosion which occurs in an electric conductor

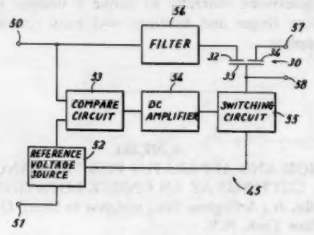
installed in electrical contact with the earth as a function of leakage current flowing therethrough, comprising:

an earthable reference electrode of given material adapted to be in good electrical contact with the earth, said earthable reference electrode having a characteristic potential difference, between said earthable reference electrode and the earth per se, which is characteristic of said given material of said electrode,

potential memory device means having at least one cathode and an anode and responsive to an input voltage across said anode and said at least one cathode for storing an electrical charge indicative of said input voltage, and for exhibiting, between said anode and said at least one cathode, a terminal voltage which is linearly changeable in direct proportion to the electrical charge stored therein,

comparing means adapted to be connected to said electrical conductor and said earthable reference electrode for detecting a potential difference between said electric conductor and said earthable reference electrode, said potential difference representing said voltage associated with electrolytic corrosion,

reference voltage means for providing a reference voltage



selected for compensation of said potential difference between said earthable reference electrode and the earth per se,

said comparing means providing a comparison output only when said potential difference between said electric conductor and said earthable reference electrode differs from said reference voltage,

switching means operatively associated with said comparing means and said potential memory device means for controlling said potential memory device means,

output means connected to said anode and said at least one cathode of the device for providing an indication of an integrated value of said voltage associated with electrolytic corrosion occurring in said electric conductor in terms of said terminal voltage of said potential memory device means, and

said switching means being responsive to said comparison output of said comparing means for controlling said potential memory device means to conduct so as to vary the electrical charge stored therein, whereby said output of said output means is compensated for the characteristic potential difference between said earthable reference electrode and the earth per se.

4,209,377

OXYGEN SENSING ELEMENT

Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, Toyota; Shinichi Matsumoto, Toyota; Toshinobu Furutani, Toyota, and Hiroshi Wakizaka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

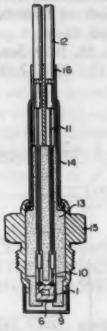
Filed Apr. 6, 1979, Ser. No. 27,832

Claims priority, application Japan, Sep. 8, 1978, 53-110305

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **7 Claims**

1. An improvement in an oxygen sensing element which comprises a solid electrolyte member composed of sintered material, and a means for providing a reference oxygen partial pressure, composed of a sintered product of a finely divided metal or metal-metal oxide powder, said means being completely embedded within the solid electrolyte member and having a lead-out wire connected thereto, and said solid electrolyte member having an electrode or electrodes mounted on the exterior surface thereof, said improvement comprising said finely divided metal or metal-metal oxide powder having dispersed therein an antisintering material and a pore-forming material capable of subliming or being decomposed, thereby to generate gas upon sintering; the amounts of the antisintering material and the pore-forming material being from 5 to 70% by weight and from 20 to 80% by weight, respectively, based on the total weight of the antisintering and pore-forming materials-incorporated metal or metal-metal oxide powder.



4,209,378

OXYGEN SENSING ELEMENT

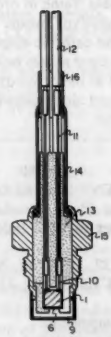
Hiroshi Schinohara, Okazaki; Yasuhiro Otsuka, Toyota; Shinichi Matsumoto, Toyota; Toshinobu Furutani, Toyota, and Hiroshi Wakizaka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1979, Ser. No. 36,379

Claims priority, application Japan, Aug. 8, 1978, 53-95778

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **9 Claims**



1. An improvement in an oxygen sensing element which comprises a solid electrolyte member composed of sintered material, and a means for providing a reference oxygen partial pressure, composed of a sintered product of a finely divided metal or metal-metal oxide powder, said means being completely embedded within the solid electrolyte member and having a lead-out wire connected thereto, and said solid electrolyte member having an electrode or electrodes mounted on

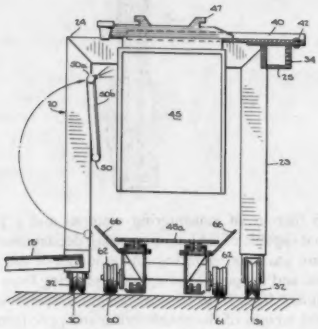
the exterior surface thereof, said improvement comprising said sintered product having dispersed therein a finely divided platinum group metal powder in an amount of from 0.5 to 10% by weight, based on the total weight of the sintered product.

4,209,379

CATHODE STRIPPING SYSTEM

George M. Freeman, Dollard des Ormeaux, and Victor E. Robinson, Porcupine, both of Canada, assignors to Texasgulf Canada Ltd., Stamford, Conn.

Filed Jun. 18, 1979, Ser. No. 49,295
Int. Cl.[2] C25C *7/00, 7/08*
U.S. Cl. 204—198 **7 Claims**



1. A system for stripping electrolytically deposited zinc on a cathode sheet which comprises a vertically standing frame for supporting a plurality of cathode sheets to be stripped, said frame having the front side thereof open and being of a generally rectangular configuration formed by end stands each of which includes a pair of leg members, means connecting the rearward portion of said end stands to one another, a plurality of cathode sheet holding means each being adapted to hold a cathode sheet, a plurality of mounting means disposed on said connecting means suitable for mounting said cathode sheet holding means, said mounting means being spaced from one another allowing sufficient pivotal movement of said cathode sheet holding means to permit access to the face of each sheet from the open side of said frame in order to perform the stripping operation, and conveyor means adapted to receive and convey the stripped zinc cathode disposed beneath the length of said frame, said conveyor means being upwardly inclined to a predetermined height at the downstream end thereof so that a plurality of said stripped zinc sheets may be stacked adjacent the end of said conveyor.

4,209,380

CATHODE ELEMENT FOR ELECTROLYTIC CELL

Carl W. Raetzsch, and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,647
Int. Cl.[2] C25B *11/03, 13/08, 9/00*
U.S. Cl. 204—282 **13 Claims**

1. A cathode unit comprising:

(a) a cathode element containing:

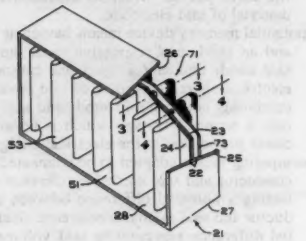
(1) a hollow, substantially non-conductive finger having two substantially parallel, perforate side walls, a top, a bottom, a leading edge, and an open trailing edge;

(2) a synthetic separator on the outer surface of the hollow finger; and

(3) a cathodic electrode inside said finger, said cathodic electrode having a base and electrical conduction means at the base thereof;

(b) a backplate in electrical contact with the cathodic electrode through said electrical conduction means; and

(c) a backscreen spaced from and substantially parallel to said backplate, and interposed between said hollow finger and said backplate the open trailing edge of said hollow



finger bearing upon said backscreen, and said hollow finger and said back screen having an electrolyte tight seal therebetween whereby to define a volume within said hollow finger and between said back screen and said backplate.

4,209,381

METHOD AND APPARATUS FOR TREATING DRILL CUTTINGS AT AN ONSITE LOCATION

John Kelly, Jr., Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,713
Int. Cl.[2] C10G *1/00*; C09K *7/00*; E21B *21/00*; F26B *7/00*
U.S. Cl. 208—8 LE **7 Claims**

1. A method of treating oil-contaminated drill cuttings from a well drilling operation to clean said drill cuttings at an onsite location, said method comprising:

separating said drill cuttings from the drilling fluid used in said drilling operation;

continuously passing said drill cuttings through a heating section;

heating said drill cuttings while in said heating section with steam having a temperature greater than 212° F. to distill the oil from said drill cuttings thereby cleaning said drill cuttings;

passing the distilled oil from the heating section to a cooling section;

cooling said distilled oil while in said cooling section to condense said distilled oil; and

disposing of said cleaned drill cuttings after they pass from said heating section.

4,209,382

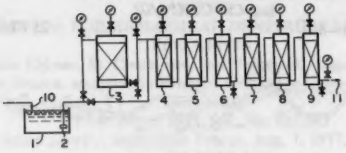
OIL ADSORBENT AND PROCESS FOR PREPARATION THEREOF

Kosaku Noguchi, Tokyo; Kiyoharu Yoshimura, Izumi; Honami Tanaka, Izumi, and Masao Hayashi, Izumi, all of Japan, assignors to Koa Oil Co., Ltd., Tokyo, Japan

Division of Ser. No. 708,716, Jul. 26, 1976, Pat. No. 4,094,776.
This application Feb. 15, 1978, Ser. No. 877,808
Claims priority, application Japan, Oct. 6, 1975, 50/119824; Nov. 27, 1975, 50/141180
Int. Cl.[2] C10C *3/02*
U.S. Cl. 208—22 **10 Claims**

1. An oil adsorbent consisting essentially of a solid particu-

late pitch having a volatile matter content of about 10% by weight to about 60% by weight and formed by heat treating a



vacuum residual oil at a temperature of about 400° C. to 450° C. and granulating or pulverizing the resulting product.

4,209,383

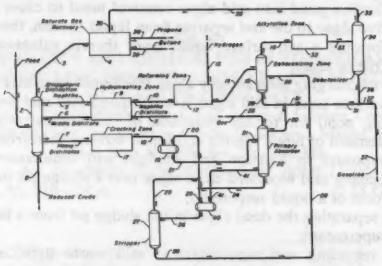
LOW BENZENE CONTENT GASOLINE PRODUCING PROCESS

Richard C. Herout, Palatine, and Kenneth D. Uitti, Bensenville, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 848,058, Nov. 3, 1977, Pat. No. 4,140,622. This application Nov. 16, 1978, Ser. No. 961,320

Int. Cl.[2] C07C *5/32;* C10G *39/00*

U.S. Cl. 208—93 **8 Claims**



1. A process for the production of gasoline with a reduced benzene content which comprises the steps of:

(a) passing a first gasoline precursor stream comprising a mixture of above 25 mole percent aromatics and C_4 to C_9 paraffinic hydrocarbon, said mixture having a boiling point range between 90° F. and 410° F., into a first fractionation zone operated at fractionation conditions effective to produce a net overhead stream comprising benzene and a net bottoms stream comprising C_9 hydrocarbons;

(b) passing a second gasoline precursor stream into a second fractionation zone operated at fractionation conditions effective to produce a net overhead stream comprising C_3 and C_4 olefins, C_3 and C_4 paraffins and benzene and a net bottoms stream comprising C_9 hydrocarbons;

(c) passing the net overhead stream of the first fractionation zone and the net overhead stream of the second fractionation zone into an alkylation zone, wherein the ratio of olefin to aromatic hydrocarbons is above 1.0:1.0 in the combination of the net overhead streams passed to said alkylation zone which is maintained at alkylation-promoting conditions and effecting the alkylation of said benzene with said olefin and the production of an alkylation zone effluent stream comprising C_9 and C_{10} alkylaromatic hydrocarbons and C_3 and C_4 paraffins;

(d) passing the alkylation zone effluent stream into a third fractionation zone operated at conditions effective to produce a net overhead stream comprising C_4 paraffins and a net bottoms stream comprising C_{10} alkylaromatic hydrocarbons; and,

(e) combining at least a portion of the net bottoms stream of the third fractionation zone with at least a portion of the net bottoms stream of the first fractionation zone and thereby forming a gasoline boiling range product stream of reduced benzene content.

4,209,384

HYDROCARBON HYDROPROCESSING

Lee Hilfman, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 22, 1978, Ser. No. 972,629

Int. Cl.[2] B01J *29/06;* C10G *13/02*

U.S. Cl. 208—111 **7 Claims**

1. A catalyst composition comprising a platinum component on a solid support comprising alumina and mordenite wherein said platinum component is incorporated upon said solid support with a solution having a pH greater than about 6.

7. A hydrocarbon conversion process which comprises reacting a hydrocarbon and hydrogen at hydrocarbon conversion conditions in contact with a catalytic composite comprising a platinum component on a solid support comprising alumina and mordenite wherein said platinum component is incorporated upon said solid support with a solution having a pH greater than about 6.

4,209,385

METHOD FOR REDUCING THE NITROGEN CONTENT OF SHALE OIL WITH A SELECTIVE SOLVENT COMPRISING AN ORGANIC ACID AND A MINERAL ACID

Carole S. Stover, Van Nuys, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 27, 1979, Ser. No. 52,636

Int. Cl.[2] C10G *17/02*

U.S. Cl. 208—254 R **15 Claims**

1. A method for reducing the nitrogen content of shale oil by removing nitrogen-containing compounds from shale oil, comprising the steps of:

extracting the shale oil with an immiscible selective solvent system for the nitrogen-containing compounds comprising an organic acid and a mineral acid; and

separating the immiscible selective solvent system containing nitrogen-containing compounds from the shale oil having a reduced nitrogen content.

4,209,386

METHOD AND APPARATUS FOR THE WET GRAVITY CONCENTRATION OF ORES

Philip J. Giffard, Southport, Australia, assignor to Mineral Deposits Limited, Southport, Australia

Filed Nov. 21, 1977, Ser. No. 853,751

Claims priority, application Australia, Nov. 22, 1976, PC8218

Int. Cl.[2] B03B *11/00*

U.S. Cl. 209—459 **17 Claims**

1. A method for the wet gravity concentration of particulate ores, comprising the steps of:

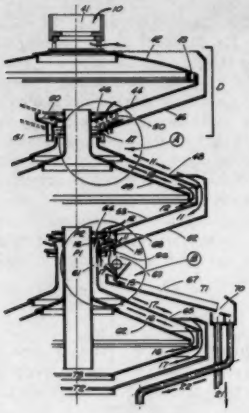
(a) stratifying a stream of ore pulp consisting of a mixture of concentrate particles and lighter tailings particles in water such that at least a portion of the concentrate particles become located at or near the bottom of the stream thereby to form a concentrate enriched stratum at the bottom of the stream, a concentrate depleted stratum at the top of the stream, and an intermediate stratum of approximately feed grade material;

(b) dividing the stream to produce two sub-streams, one being richer in concentrates than the other;

(c) stratifying each of the richer and poorer sub-streams such that at least a portion of the concentrate particles in each becomes located at or near the bottom of the sub-stream to thereby form a concentrate enriched stratum at the bottom of the sub-stream, a concentrate depleted stratum at the top of the sub-stream, and an intermediate stratum of approximately feed grade material;

(d) dividing the richer sub-stream to remove at least part of its enriched stratum without intruding substantially into its feed grade stratum;

(e) dividing the poorer sub-stream without prior comingling of said poorer sub-stream with other poorer sub-streams to



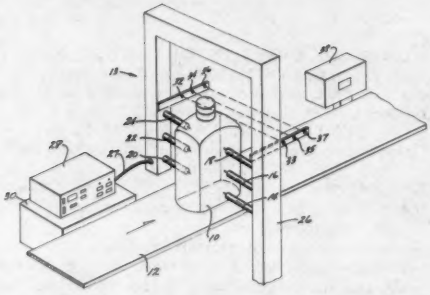
remove at least part of its depleted stratum without intruding substantially into its feed grade stratum.

4,209,387

CONTOUR AND WIDTH GAUGE FOR PANELED CONTAINERS

Gerald F. Scherf, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 19, 1978, Ser. No. 953,057
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—530 **21 Claims**



1. Apparatus for inspecting the contour of paneled containers, comprising:

means for moving containers past an inspection station wherein paneled sidewalls of said containers are generally parallel to their direction of travel;

measurement means, located at said inspection station for measuring the distance between a container panel and a generally vertical reference line from three spaced apart points located on said reference line as said container moves past said inspection station;

said measurement means including an LVDT located at each of said measurement points, said LVDT's contacting said bottle as it moves past said inspection station; and

detection means, connected to said measurement means, for determining whether or not said container has a predetermined contour.

4,209,388

METHOD AND APPARATUS FOR TREATING SEWAGE

Arthur A. DeFraites, P.O. Box 327, Houma, La. 70361

Filed Nov. 6, 1978, Ser. No. 958,145
Int. Cl.[2] C02C *1/02*
U.S. Cl. 210—8 **23 Claims**

1. A method for treatment of raw sanitary sewage in a series of interconnected treatment ponds comprising a waste stabilization pond containing live algae, an algae removal pond having means for minimizing the euphotic zone therein by excluding sunlight and sustenance from live algae discharged thereinto from said waste stabilization pond, a sludge pit, and a polishing pond for further upgrading liquid discharged thereinto from said algae removal pond, comprising the following steps:

(a) passing said sewage into said waste stabilization pond for decomposition and reduction of biochemical oxygen demand by said live algae;

(b) passing live algae containing liquid from said waste stabilization pond into said algae removal pond to cause said live algae to die and separate from liquid therein, thereby forming a sub-surface liquid layer therein substantially free of algae;

(c) discharging substantially algae-free liquid from said sub-surface layer in said algae removal pond into said polishing pond for further reduction of biochemical oxygen demand of liquid therein and liquid flowing therefrom by exposure to aeration and sunlight and simultaneously passing said separated dead algae into a sludge pit in the form of a liquid suspension;

(d) separating the dead algae in the sludge pit from a liquid supernatant;

(e) recycling said supernatant to said waste stabilization pond; and

(f) collecting treated liquid from said polishing pond and discharging said collected treated liquid for final disposal.

4,209,389

MICROBIOLOGICAL METHOD FOR REMOVING PATHOGENIC MICROBES AND DISSOLVED ORGANIC MATERIALS FROM LIQUIDS

Karl H. Hartkorn, Heinri-Zille-Strasse 37, 6085 Nauheim, Fed. Rep. of Germany

Continuation of Ser. No. 597,977, Jul. 22, 1975, abandoned. This application Apr. 14, 1978, Ser. No. 896,605
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1974, 2436535
Int. Cl.[2] C02C *1/04*
U.S. Cl. 210—11 **6 Claims**

1. A method for removal of contaminating impurities from sewage and waste water liquid, which comprises the steps of subjecting said liquids to an electrochemical electrocoagulation pretreatment to free the liquids of solids and colloidal-suspended matter;

adding to said pretreated liquid a seed from a Kefir milk acid bacterial microorganism culture in the form of a centrifugate of a Kefir milk bacteria culture;

passing said seeded liquid over a column consisting of an anti-magnetic stainless steel fabric in a cylindrical shape, and having a large surface area on which said Kefir seed of microorganisms deposits and forms a biological lawn;

supplying atmospheric oxygen to said column while passing said contaminated liquid thereover; said lawn of Kefir microorganisms utilizing the bacterial contaminants of said liquid as nutrient material, whereby, owing to the biological processes of said Kefir bacteria, said liquids are freed from said contaminants; and

then collecting the purified effluent from said column.

4,209,390

PROCESS FOR BIOLOGICAL DENITRIFICATION OF EFFLUENTS

Bruno Cabane, St. Cloud, and Joel Vergnault, Argenteuil, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jul. 6, 1978, Ser. No. 922,343
Claims priority, application France, Aug. 7, 1977, 77 21119
Int. Cl.[2] C02C *1/14*
U.S. Cl. 210—12 **8 Claims**

1. A process for the biological denitrification of effluents containing up to 10 g/l of nitric nitrogen comprising:

(a) selecting strains of bacteria having a denitrifying activity;

(b) preculturing the selected strains in a denitrification medium containing a substrate of calcium nitrate under anaerobiosis conditions in the presence of a carbonaceous material to form in situ an active denitrification support comprising denitrifying bacteria and grains of calcium carbonate; and

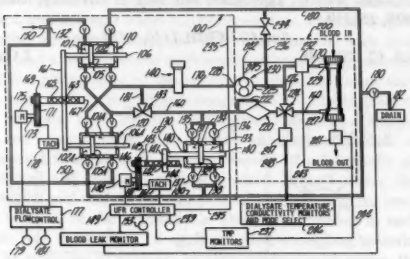
(c) contacting the active denitrification support with the effluents containing nitric nitrogen which are to be denitrified.

4,209,391

APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING HEMODIALYSIS AT A PRE-SELECTED ULTRAFILTRATION RATE

Bennie J. Lipps, Walnut Creek, and Julian I. Landau, Concord, both of Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed Nov. 6, 1978, Ser. No. 958,329
Int. Cl.[2] B01D *19/00*; G05D *11/00*; B01D *11/04*
U.S. Cl. 210—22 A **13 Claims**



1. An improved closed dialysate circuit for use in hemodialysis comprising an above atmospheric pressure portion comprising dialysate supply and removal means and ultrafiltrate removal means and below atmospheric pressure portion comprising a hemodialyzer,

said above atmospheric pressure portion including a dialysate supply line and a dialysate drain line,

a portion of a kidney fresh dialysate supply line and

a portion of a kidney spent dialysate removal line, first and second cylinder units having means for separating each said cylinders(s) into two chambers as said means moves between the ends of said cylinder, said first and second units each having valves and interconnected switching means effective to cause concurrently one of said units to fill with fresh dialysate as spent dialysate is discarded while the other said unit fills with spent dialysate as fresh dialysate is supplied to said kidney and to alternate functions after said valves are switched at the same time, and ultrafiltrate removal means connected between one of said dialysate lines and said dialysate drain line effective to withdraw dialysate from said line and transfer same to said dialysate drain line, and means for actuating said ultrafiltrate removal means independently of the means actuating said first and said second cylinder units and remotely located control means for controlling said ultrafiltrate removal means, and a degassifier located in the spent dialysate delivery line adjacent to the chamber of said cylinder unit to be filled therewith,

said below atmospheric pressure portion including a portion of a kidney spent dialysate removal line,

an artificial kidney having a membrane capable of permitting simultaneous dialysis and ultrafiltration of blood and a pair of inlet and outlet blood ports and a pair of inlet and outlet dialysate ports,

pressure reducing means in the fresh dialysate supply line to said artificial kidney adjacent to said dialysate inlet port thereof, and pressure increasing means in the spent dialysate removal line from said kidney adjacent to said dialysate outlet port thereof.

8. A method for automatically controlling ultrafiltration during hemodialysis in a single pass system which comprises the steps of

(1) providing a closed circuit having an artificial kidney below atmospheric pressure portion thereof and means for supplying fresh and removing spent dialysate from said kidney and for removing fresh dialysate from said circuit in an above atmospheric pressure portion of said circuit,

(2) supplying blood to and from said kidney,

(3) supplying fresh dialysate from means in said above atmospheric pressure portion of said circuit to said kidney,

(4) withdrawing degassed dialysate from said closed circuit at a location in said above atmospheric pressure portion of said circuit at a rate pre-selected for removal of water from said blood,

(5) returning spent dialysate from said kidney to said spent dialysate removal means, and

(6) raising the pressure on said spent dialysate to a pressure higher than the pressure on said spent dialysate at the kidney exit port and to a pressure at least as high as the pressure on said fresh dialysate in said fresh dialysate supply means at a location intermediate said kidney and said spent dialysate removal means, and

(7) removing gas bubbles from the pressurized spent dialysate solution produced in step 6 prior to returning the resultant gas-free spent dialysate to said spent dialysate removal means, and

(8) controlling the rate of water removal from said blood in said kidney by controlling the rate of withdrawal of dialysate in the said above atmospheric pressure portion of said circuit.

4,209,392

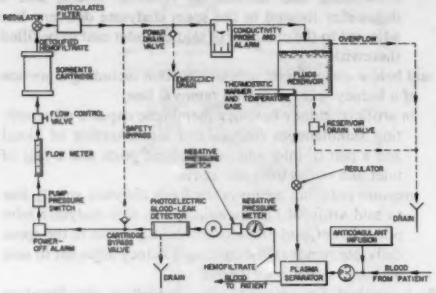
PORTABLE HEPATIC-ASSIST METHOD AND APPARATUS FOR SAME

Richard A. Wallace, 7304 SW. 53 Ave., Portland, Oreg. 97219

Filed May 15, 1978, Ser. No. 905,956
Int. Cl.[2] B01D *13/00, 31/00*
U.S. Cl. 210—23 F **8 Claims**

1. A process for removing hepatic toxins from blood comprising forming a hemofiltrate by passing the blood adjacent to microporous membranes having an average pore diameter of from about 0.1 to about 0.5 micron, and causing a pressure differential across said membranes such that a fluid portion of the blood containing substantially all hepatic toxins passes through the membranes, thereby forming a hemofiltrate, and contacting said hemofiltrate with a sterilizable 16–50 mesh sorbents mixture consisting essentially of activated charcoal and a pre-equilibrated strong acid cation-exchange resin in mixed sodium, calcium and potassium forms, the sorbents mixture containing by weight, 20–70% activated charcoal,

25–85% cation-exchange resin and 0–30% by weight aluminum oxide, and the cation-exchange resin containing, by



weight, 10–35% in the sodium form, 15–40% in the calcium form and 1–10% in the potassium form.

4,209,393

SEWAGE SLUDGE ADDITIVE

John J. Kalvinskas, Pasadena; William A. Mueller, Glendale, and John D. Ingham, La Crescenta, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 28, 1976, Ser. No. 652,979
Int. Cl.[2] C02B *1/14*
U.S. Cl. 210—40 **3 Claims**

1. In a sewage treatment process of the type wherein the raw sewage is mixed with activated carbon for the purpose of absorption of dissolved contaminants in the sewage water and/or settling the settleable matter therein as sewage sludge, said sewage sludge thereafter being pyrolyzed to provide said activated carbon, the improved method of obtaining adequate activated carbon for mixing with said raw sewage comprising the steps of:

mixing said sewage sludge with coal to produce a mixture, wherein said coal is lignite,

pryolyzing said mixture to provide activated carbon,

mixing said activated carbon with said raw sewage, and

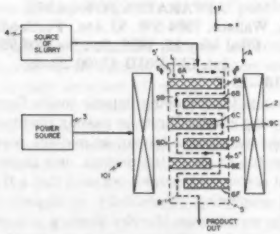
mixing from 1 to 25% sodium carbonate with 99 to 75% of lignite.

4,209,394

MAGNETIC SEPARATOR HAVING A MULTILAYER MATRIX, METHOD AND APPARATUS

David R. Kelland, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 5, 1979, Ser. No. 9,705
Int. Cl.[2] B01D *35/06*
U.S. Cl. 210—42 S **18 Claims**



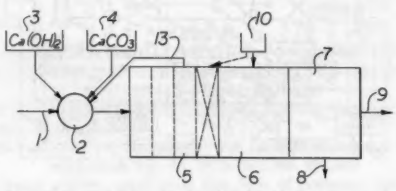
1. A magnetic separator comprising a duct having an inlet and an outlet and having walls defining a fluid flow path in a flow direction from the inlet to the outlet, a porous matrix means in the duct comprising a plurality of spaced apart porous layers of filamentary material arranged along said flow direction and extending transversely to the flow direction, each of said spaced apart layers having an associated gap for the bypassing of fluid when the layer becomes clogged, the layers being positioned in the duct so that fluid flowing along said flow path in said flow direction from the inlet to the outlet is constrained to pass through said layers, means for supplying a stream of fluid containing magnetic particles to said inlet, means for magnetizing the filamentary material to cause the magnetized material to remove magnetic particles from the stream as the stream passes through the porous layers so that magnetic particles are retained on the layers, the porosity of the porous layers and the size of the gaps being such that the stream flows along said flow path in said flow direction from the inlet to the outlet and passes through said spaced apart layers without substantial bypassing of said layers until a layer becomes clogged with magnetic particles and then the stream flows around the clogged layer through the associated gap to bypass the clogged layer automatically and to reach and pass through the next layer that is not clogged, whereby substantially the full volume of the matrix means is utilized effectively to remove magnetic particles initially and the effective volume of the matrix means utilized is reduced through bypassing as layers of said matrix means become clogged.

4,209,395

PROCESS FOR SLOW SOFTENING WATER

Norbert Berlenbach, Wiesbaden-Dotzheim, and Ferdinand Klegraf, Wiesbaden, both of Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 808,125, Jun. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 666,680, Mar. 15, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 942,958
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1975, 251210
Int. Cl.[2] C02B *1/20, 1/22*
U.S. Cl. 210—46 **2 Claims**



1. In a process for slow softening raw water having soluble calcium compounds present therein, wherein at least one alkaline precipitating agent is admixed with the water to be softened in a mixing zone and then the calcium compounds are changed inside a reaction zone through which the water passes after being admixed with the alkaline precipitating agent into insoluble calcium carbonate matter which is subsequently changed in a flocculation zone into settleable flocs by the addition of a flocculating agent containing trivalent metal ions, the improvement comprising:

(a) mixing the raw water in addition to said alkaline precipitating agent with at least 5 g/m^3 of finely divided crystalline calcium carbonate in said mixing zone prior to the addition of and in the absence of said flocculation agent to form seeds for said calcium carbonate matter which newly precipitates from the raw water inside said reaction zone,

(b) immediately presettling and discharging at least a part of the insoluble calcium carbonate matter which has been precipitated inside said reaction zone, and

(c) recycling said part of the presettled and discharged insol-

uble calcium carbonate matter to said mixing zone as said seeds for the precipitation in said reaction zone.

4,209,396

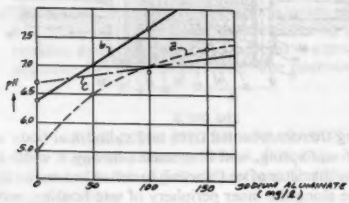
METHODS FOR USE IN WATER PURIFICATION PARTICULARLY SEWAGE TREATMENT

Eugene B. White, Oak Park, and Mahindar N. Sharma, Lake Zurich, both of Ill., assignors to Filters International Inc., Chicago, Ill.

Division of Ser. No. 429,488, Jan. 2, 1974, Pat. No. 4,081,365. This application Sep. 10, 1975, Ser. No. 612,247

Int. Cl.[2] C02B 1/20

U.S. Cl. 210—47 14 Claims



1. A chemical material, for use in the purification treatment of water, particularly for the automatic treatment of sewage and the like containing phosphates, suspended and colloidal materials, and adapted to be mixed with a quantity of water to form a liquid concentrate containing reacted floc, which quantity is small in volume as compared with the quantity of water to be treated, with such concentrate and prereacted floc therein being adapted to be introduced in quantities, small as compared with said concentrate volume, into such water to be treated, comprising a water-soluble coagulant, a reactive agent therefor, additional coagulant over that reactive with such agent, and a water-soluble agglomeration-promoting material, with the proportions of the respective materials being such that, upon introduction of such concentrate in suitable quantity into the water to be treated, the respective amounts of coagulant and reactive agent will provide an adequate amount of prereacted floc sufficient for the removal of substantially all suspended and colloidal material present in such water, the amount of said additional coagulant will be sufficient for reaction with all of the reactionable phosphates present in such water, and the amount of agglomeration-promoting material will be sufficient to promote agglomeration in such water, the respective total amounts of prereacted floc, coagulant, and agglomeration-promoting material being sufficient to provide reasonable excesses thereof consistent with insuring adequate amounts of the respective materials for the specified purposes, and insufficient to materially, undesirably affect the pH of such water, and/or the zeta potential from a range of −5 to +5.

4,209,397

FLOCCULANTS FOR AQUEOUS SYSTEMS

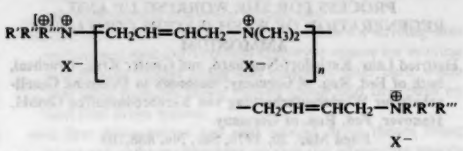
Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, N.J.; Alfonso N. Petrocci, Glen Rock, N.J., and Morris Weinstein, Paramus, N.J., assignors to Kewanee Industries, Bryn Mawr, Pa.

Filed Jan. 31, 1979, Ser. No. 7,948

Int. Cl.[2] B01D 21/01; C02B 1/20

U.S. Cl. 210—54 8 Claims

1. A method of producing floc which comprises adding to an aqueous system containing emulsified, dispersed or suspended materials, an effective amount of a polymeric quaternary ammonium compound or mixtures thereof of formula:



wherein (1) R′ R″ and R‴ may be the same or different alkyl groups of from 1 to 20 carbon atoms, selectively substituted by from 1 to 2 hydroxyl groups and selectively containing from 1 to 2 olefinic double bonds, or (2) R′ and R″ may be the same or different alkyl groups of from 1 to 20 carbon atoms selectively substituted by from 1 to 2 hydroxyl groups and selectively containing from 1 to 2 olefinic double bonds, and R‴ represents a benzyl group, or (3) R′ is an alkyl group of from 1 to 20 carbon atoms selectively substituted by from 1 to 2 hydroxyl substituents and selectively containing from 1 to 2 olefinic double bonds and R″ R‴ N represents a N-heterocyclic group of from 5 to 7 atoms, or (4) R′ is an alkyl group of from 1 to 20 carbon atoms selectively substituted by from 1 to 2 hydroxyl substituents and selectively containing from 1 to 2 olefinic double bonds and R″ R‴ N taken together with an oxygen atom represents a N-morpholino group; X is a halogen atom or atomic weight above 30; and n is an integer of from 2 to 30 to flocculate said materials.

4,209,398

WATER TREATING PROCESS

Motohiko Ii, Uji; Yoshio Goto, Takatsuki; Takashi Suzuki, Yokohama, and Sotoo Kubo, Tokyo, all of Japan, assignors to Kurita Water Industries Ltd., Osaka and Sanyo Chemical Industries, Ltd., Kyoto, both of, Japan

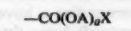
Continuation of Ser. No. 725,180, Sep. 21, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,752

Int. Cl.[2] C02B 5/02, 5/06

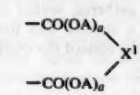
U.S. Cl. 210—58 21 Claims

1. A process for treating water to inhibit formation of scale and deposits on surfaces in contact with the water and to minimize corrosion of said surfaces, which comprises: mixing in the water

(a) an effective amount of water-soluble polymer having a molecular weight of from 500 to 200,000, said polymer consisting essentially of structural units derived from a monomer having an ethylenically unsaturated bond and one or more carboxyl radicals wherein from 10 to 100% of said carboxyl radicals are modified to have the formula



or the formula



wherein OA is oxyalkylene having 2 to 4 carbon atoms; X is hydroxy, alkoxy having 1 to 4 carbon atoms or monovalent phosphate radical; X^1 is a divalent phosphate radical; and "a" is a positive integer; and wherein the remainder of said carboxyl radicals are water-soluble salts thereof with monovalent cations; and

(b) an effective amount of one or more corrosion inhibitor compounds selected from the group consisting of inorganic phosphoric acids and water-soluble salts thereof, phosphonic acids and water-soluble salts thereof, organic phosphoric acid esters and water-soluble salts thereof, and polyvalent metal salts capable of being dissociated to polyvalent metal ions in water.

4,209,399
PROCESS FOR THE WORKING UP AND REGENERATION OF WASH WATERS CONTAINING AMMONIUM

Helfried Lahr, Karlsdorf-Neuthard, and Günter Krug, Bruchsal, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft fur Wiederaufarbettung von Kernbrennstoffen GmbH, Hanover, Fed. Rep. of Germany

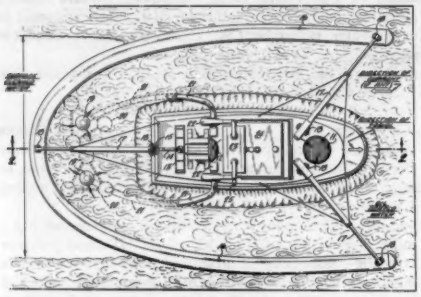
Filed Mar. 20, 1978, Ser. No. 888,703
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712462
Int. Cl.[2] G21F *9/08*
U.S. Cl. 210—59 13 Claims

1. A process for the regeneration of ammonium, heavy metal salts, ammonium nitrate and organic substances containing wash waters resulting from the production of hydrated oxide particle actinides which comprises evaporating said wash waters to a concentration of more than 900 grams salt per liter and scrubbing the resultant CO_2-containing vapors prior to their condensation with hot sodium hydroxide solution, the sodium hydroxide solution being of 20 to 35 percent by weight and having a temperature of between 95° and 115° C.

4,209,400
OIL SPILL CLEANUP METHOD AND APPARATUS

Fred M. Mayes, Malvern, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 875,277, Feb. 6, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,639
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—65 6 Claims



1. A method to recover oil from the surface of oil contaminated water which comprises partially surrounding a hovercraft with a floating oil barrier, said hovercraft being fitted with means to direct air onto the oil contaminated water to sweep it within said barrier, moving the hovercraft into said oil contaminated water and collecting oil gathered within the barrier behind the hovercraft through a suction line from which the oil is conducted to storage tanks aboard the craft.

4,209,401
FILTER DRIER

Paul V. Henton, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1978, Ser. No. 897,952
Int. Cl.[2] B01D *27/02*
U.S. Cl. 210—136 15 Claims

1. A filter drier, comprising:

an elongated housing defining a chamber having a preselected diameter, said housing including an inlet and an outlet communicating with said chamber;

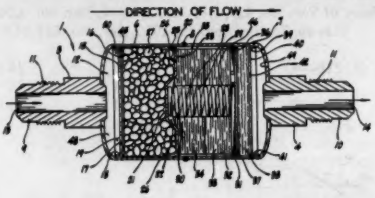
a first perforate plate positioned in said housing near said inlet;

a second perforate plate positioned in said housing and spaced from said first plate, said second plate having a hub area formed in it;

adsorptive material fill between said first and said second plates;

a spring, said spring including a cylindrical body portion having a first end and an enlarged second end, the first end of said spring being sized for reception in the hub area of said second plate said body portion defining an axial flow passage;

filter media of inorganic fibrous material having a central



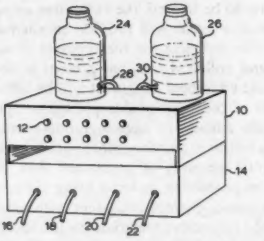
opening therein mounted over said cylindrical body section of said spring, said filter media having a width less than the diameter of said housing to define an annular flow passage along the inner periphery of said housing; and

antibypass means mounted adjacent the enlarged second end of said spring to block said peripheral flow passage so that fluid entering said inlet passes through said absorptive material, at least some flow passing along said annular flow passage until resistance to said flow forces the fluid inwardly of said filter media toward said axial flow passage.

4,209,402
KIDNEY DIALYSIS FILTER WASHING PROCESS

William M. Gentles, 22 Inglewood Dr., Toronto, Canada

Filed Jul. 12, 1977, Ser. No. 814,856
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—137 4 Claims



1. Apparatus for washing an artificial kidney of the type comprising a housing, a first, blood compartment, a second dialysate compartment and a flexible filter membrane separating said first and second compartments and constituting a side wall of said first compartment, a fluid inlet for said first compartment, a fluid outlet for said first compartment, said inlet and said outlet communicating with the first compartment at locations remote from one another, said apparatus comprising:

a fluid inlet hose adapted to communicate with said fluid inlet;

a washing fluid inlet branch communicating with the fluid inlet hose and adapted to supply washing fluid to said first compartment for circulation therethrough in contact with one side of said flexible filter membrane;

a pressure regulator valve in said washing fluid inlet branch, adapted to regulate fluid pressures therein;

first valve means in said washing fluid inlet branch adapted to open and close fluid communication therethrough;

a drain branch communicating with the fluid inlet hose;

second valve means in said drain branch adapted to open and close fluid communication therethrough;

a fluid outlet hose which has a section which is resiliently expandable and contractable in response to fluid pressure changes in said first compartment, said outlet hose being adapted to communicate with said outlet and provide for discharge of the washing fluid from the first compartment to maintain circulation of the fluid in contact with one side of the membrane;

third valve means in said fluid outlet hose adapted to open and close fluid communication therethrough;

operating means for opening and closing the first, second and third valve means;

timing means controlling said operating means and arranged to actuate said operating means for opening and closing the first, second and third valve means in a predetermined sequence and for predetermined time intervals.

4,209,403

MAGNETIC FILTER APPARATUS

Friedrich Dorgathen, Ratingen-Hösel, Fed. Rep. of Germany, assignor to Montanus Industrieanlagen GmbH, Essen, Fed. Rep. of Germany

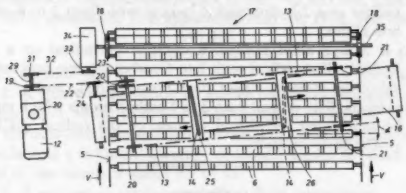
Filed Mar. 8, 1978, Ser. No. 884,610

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2710005

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.² B01D *35/06*

U.S. Cl. 210—222 **6 Claims**



1. In a magnetic filter apparatus, including a liquid container having an inlet for admitting liquid contaminated by magnetizable material and an outlet for discharging purified liquid, the combination of:

a wall of spaced, parallel magnetic filter bars disposed between said inlet and said outlet, and having gaps therebetween for the passage of liquid;

a first endless conveyor arranged to be movable along a first path, and carrying said wall of magnetic filter bars, the longitudinal axes of said filter bars extending generally perpendicular to said first path;

first drive meaas arranged and operable for driving said first endless conveyor along said first path; and

a cleaning device for cleaning said magnetic filter bars, said cleaning device being disposed above the level of said liquid outlet, and said first endless conveyor being arranged to move said magnetic filter bars first through said contaminated liquid and then through said cleaning device, said cleaning device comprising:

second and third, superimposed endless conveyor means disposed on opposite sides of said wall of magnetic filter bars, and arranged to be movable along second and third paths, respectively;

at least one scraper blade carried by each of said second and said third endless conveyor means, adapted to be engageable with said magnetic filter bars for removing contaminated material therefrom;

said second and said third paths extending obliquely across said first path, and forming an angle with respect to the longitudinal axes of said magnetic filter bars carried by said first endless conveyor means; and

second drive means arranged and operable for driving said second and said third endless conveyor means for moving said scraper blades along said magnetic filter bars, while said filter bars are being moved along said first path by said first drive means;

said first drive means and said second drive means being arranged and synchronized so that the advancing speeds for said scraper blades and for said magnetic filter rods are in the ratio 1:sin α.

4,209,404

FILTER PRESS

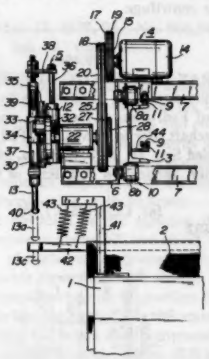
Takuji Yoshida, Osaka, Japan, assignor to NGK Insulators, Ltd., Nagoya and Noritake Iron Works Co., Ltd., Osaka, both of, Japan

Continuation of Ser. No. 807,173, Jun. 16, 1977, abandoned, which is a continuation of Ser. No. 679,439, Apr. 22, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,962

Claims priority, application Japan, May 22, 1975, 50-61680

Int. Cl.² B01D *25/12, 25/38*

U.S. Cl. 210—225 **7 Claims**



1. A filter press apparatus comprising a plurality of adjacently stacked filter plates supported on a support means, a corresponding plurality of filter cloth support bars each bar being suspended above and generally between two adjacent filter plates for supporting a length of filter cloth hung in inverted U-shape between each two adjacent filter plates, said bars being longer than the width of said filter plates and being substantially horizontal and extending approximately perpendicular to the direction in which the plates open to separate from one another, with the ends of each bar extending beyond the width of the filter plates; at least two filter cake discharge means, one located at each side of the apparatus; means mounting each said filter cake discharge means for movement in a direction generally parallel to the direction in which the filter plates open; each discharge means including a hammer means and means for moving said hammer in a circular path wherein the hammer means hits and makes rubbing frictional contact with an end of at least one of said bars for thereby vibrating the bars in both vertical and horizontal directions for removing filter cakes from a filter cloth hung on said bars.

4,209,405

CENTRIFUGE

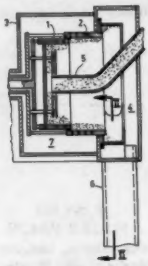
Alfred Christ, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Oct. 31, 1978, Ser. No. 956,422

Claims priority, application Switzerland, Dec. 7, 1977, 014980/77

Int. Cl.[2] B01D *33/10*

U.S. Cl. 210—376 5 Claims



1. Centrifuge having a centrifuge drum, a centrifuge housing, in said housing a solids chamber adjacent to the centrifuge drum and containing a gaseous medium the said chamber being separated from the environment of the centrifuge by the walls of the centrifuge housing, and having an outlet pipe for a flow of solids from the solids chamber; the improvement that the outlet pipe for the flow of solids comprises a diffusor and that a return channel connects the end of the diffusor to the solids chamber of the centrifuge.

4,209,406

X-RAY DIAGNOSTIC GENERATOR

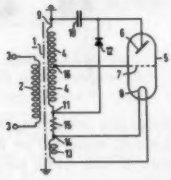
Horst Goetzl, Erlangen, and Manfred Rattner, Erlangen-Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,319

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750563

Int. Cl.[2] H05G *1/00*

U.S. Cl. 250—402 1 Claim



1. An x-ray diagnostic generator comprising a high voltage transformer and a high voltage half-wave rectifier between one end of the secondary winding of the high voltage transformer and the anode of the x-ray tube, characterized in that the rectifier (12) is connected to the cathode-side end (11) of the secondary winding (4) of the high voltage transformer (1), that a high voltage capacitor (10) is connected between the anode (6) of the x-ray tube (5) and the anode-side end (9) of the secondary winding (4) of the high voltage transformer (1), and that the rectifier (12) is polarized such that the capacitor (10) is charged during those particular secondary waves in which current does not flow through the x-ray tube (5), wherein the filament winding for the x-ray tube is a component part of the high voltage transformer, characterized in that the resistance (15) is connected between the cathode-side end (11) of the high voltage secondary winding (4) and one end (14) of the filament winding (13) at the secondary side, and that the high voltage rectifier (12) is connected with the high voltage secondary winding (4) at the connection point (11) of the resistance (15), a control grid (7) of the x-ray tube (5) being connected with a tap (16) of the high voltage secondary winding (4).

4,209,407

FIRE EXTINGUISHING AGENT

Erich Schuierer, Burghausen; Heinrich Bathelt, Altötting, and Richard Bröll, Langen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

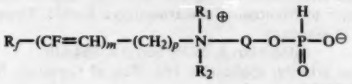
Filed Mar. 27, 1978, Ser. No. 890,203

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714013

Int. Cl.[2] A62D *1/00;* A62C *1/12*

U.S. Cl. 252—3 15 Claims

1. Foam concentrate for fire-fighting purposes which contains water, at least one foam producing fluorinated surfactant and a further foam producing component, and which has a content of from 0.5 to 2.5% by weight of a fluorinated phosphorous acid ester of the formula



in which

R_f is a perfluoroalkyl radical with from 3 to 16 carbon atoms,

m is zero or 1,

p is an integer of from 1 to 4,

R_1 is a hydrogen atom, a C_{1-4} alkyl radical, a cyclohexyl radical or a 2-hydroxyalkyl radical with from 2 to 6 carbon atoms,

R_2 is a C_{1-4} alkyl radical, a cyclohexyl radical or a 2-hydroxyalkyl radical with 2 to 6 carbon atoms, or a radical of the formula $R_f—(CF=CH)_m—(CH_2)_p$, and

Q is an alkylene radical with 2 to 4 carbon atoms which may be substituted by phenyl groups, or the radical $—CH_2—C(CH_3)_2—CH_2—$.

4,209,408

LUBRICANTS AND FUNCTIONAL FLUIDS CONTAINING β-THIOPROPIONITRILES AND SIMILAR POLYFUNCTIONAL NITRILES

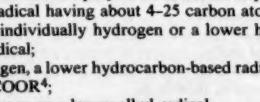
Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 637,920, Dec. 5, 1975, Pat. No. 4,058,469. This application May 6, 1977, Ser. No. 794,498

Int. Cl.[2] C10M *1/38*

U.S. Cl. 252—47 27 Claims

1. A composition comprising an oleaginous liquid of lubricating viscosity and about 0.001–20.0 parts by weight, per 100 parts of said oleaginous liquid, of at least one polyfunctional nitrile of the formula



wherein

R^1 is a monovalent or polyvalent saturated aliphatic hydrocarbon radical having about 4–25 carbon atoms;

each R^2 is individually hydrogen or a lower hydrocarbon-based radical;

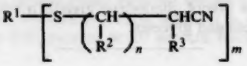
R^3 is hydrogen, a lower hydrocarbon-based radical, halogen, CN or $COOR^4$;

R^4 is hydrogen or a lower alkyl radical;

m is the valence of R^1; and

n is an integer from 0 to 2.

20. A method of causing swelling of seals in machinery which comprises contacting said seals with a solution in an oleaginous liquid of lubricating viscosity of at least one polyfunctional nitrile of the formula



wherein

R^1 is a monovalent or polyvalent saturated aliphatic hydrocarbon radical having about 4–25 carbon atoms;

each R^1 is individually hydrogen or a lower hydrocarbon-based radical;

R^3 is hydrogen, a lower hydrocarbon-based radical, halogen, CN or $COOR^4$;

R^4 is hydrogen or a lower alkyl radical;

m is the valence of R^1; and

n is an integer from 0 to 2.

4,209,409

DRILLING FLUID ADDITIVES

John W. Forster, Corpus Christi, Tex., and Louis E. Roper, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 744,057, Nov. 22, 1976, abandoned, Continuation-in-part of Ser. No. 621,098, Oct. 9, 1975, abandoned. This application May 19, 1978, Ser. No. 907,470

Int. Cl.² C09K 7/02

U.S. Cl. 252—8.5 A **14 Claims**

1. A slurry composition of matter consisting essentially of fresh water, about 15 to 40 ppb of bentonite, about 4 to 10 ppb of ferrochrome lignosulfonate, about ¾ to 3 ppb of magnesium oxide, and a sufficient quantity of basic material to result in a pH of the slurry of about 9.5 to 12.

6. A process to produce a drilling fluid comprising

(a) mixing 15 to 40 ppb of bentonite, 4 to 10 ppb of ferrochrome lignosulfonate, ¾ to 3 ppb of magnesium oxide, and a sufficient quantity of basic substance to fresh water to result in a hydrated bentonite slurry composition having a pH of about 9.5 to 12, and

(b) mixing the resulting hydrated bentonite slurry with a salty drilling liquid containing at least about 8 weight percent sodium chloride in a volume ratio of slurry to salty drilling fluid of about 1:1.

4,209,410

LUBRICANTS

Bernard A. Baldwin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 28, 1976, Ser. No. 680,825

Int. Cl.² C10M 1/42

U.S. Cl. 252—48.2 **5 Claims**

1. An improved lubricating composition comprising a major amount of a lubricating oil having incorporated therein a small amount, sufficient to improve the antiwear characteristics of the oil, of 2-(dodecylthio)ethanol or 3-(dodecylthio)-1-propanol.

4,209,411

METHYLOL POLYESTERS OF C_{12}–C_{22} HYDROCARBON SUBSTITUTED SUCCINIC ANHYDRIDE OR ACID, THEIR PREPARATION AND USE AS ADDITIVES FOR LUBRICANTS AND FUELS

Esther D. Winans, Colonia; Jack Ryer, East Brunswick; Antonio Gutierrez, Mercerville, and Harold Shaub, New Providence, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 23, 1979, Ser. No. 22,952

Int. Cl.² C10M 1/24

U.S. Cl. 252—56 D **11 Claims**

1. A hydrocarbon-soluble methylol polyester which is an equimolar reaction product of a C_{12}–C_{22} hydrocarbon substituted succinic anhydride or acid and a cyclic poly(methylol) compound of the class consisting of 2,2,6,6-tetramethylol cyclohexanol, tetrahydro-3,3,5,5-tetrakis-(hydroxymethyl)-4-pyranol and tetrahydro-3,3,5-tris-(hydroxymethyl)-5-methyl-4-pyranol.

6. A composition comprising a major amount of liquid hydrocarbon of the class consisting of fuels and lubricants and at least a rust-inhibiting amount of a hydrocarbon-soluble methylol polyester which is an equimolar reaction product of a C_{12}–C_{22} hydrocarbon substituted succinic anhydride or acid and a cyclic poly(methylol) compound of the class consisting of 2,2,6,6-tetramethylol cyclohexanol, tetrahydro-3,3,5,5-tetrakis-(hydroxymethyl-4-pyranol and tetrahydro-3,3,5-tris-(hydroxymethyl)-5-methyl-4-pyranol.

4,209,412

PROCESS FOR PRODUCING NONSTOICHIOMETRIC FERROSO-FERRIC OXIDES

Guy C. Marcot, Pulaski, Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 22, 1978, Ser. No. 908,348

Int. Cl.² C01G 49/08

U.S. Cl. 252—62.62 **4 Claims**

1. A process for producing magnetic acicular particles of nonstoichiometric ferroso-ferric oxides having a ferrous:ferric atomic ratio ranging from 0.05:1 to 0.25:1 and containing based on total iron 0.4 to 5.0 atomic % phosphorus and 2.0 to 10.0 atomic % zinc, which process comprises the steps of

(a) forming an aqueous dispersion of acicular particles of nonmagnetic ferric oxide or its hydrate;

(b) treating said particles in the aqueous dispersion at a temperature between about 30° and about 100° C. with a water-soluble phosphorus-containing compound in an amount to provide from 0.4 to 5.0 atomic % phosphorus based on the iron adsorbed on the surface of the particles;

(c) contacting the treated particles in the aqueous dispersion at a pH of at least 8.0 with a zinc compound in an amount based on the iron to provide 2.0 to 10.0 atomic % zinc adsorbed on the surface of the particles;

(d) recovering the resulting particles from the aqueous medium;

(e) heating the recovered particles under reducing conditions to form magnetite; and

(f) converting the magnetite to a nonstoichiometric ferroso-ferric oxide having a ferrous:ferric atom ratio from 0.05:1 to 0.25:1.

4,209,413

THERMAL ENERGY STORAGE MATERIAL

Peter J. C. Kent, High Wycombe, and John K. R. Page, Camberley, both of England, assignors to The Calor Group Limited, England

Filed Jun. 7, 1978, Ser. No. 913,351

Claims priority, application United Kingdom, Jun. 10, 1977, 24279/77

Int. Cl.² C09K 5/06

U.S. Cl. 252—70 **11 Claims**

1. In a thermal energy storage material which comprises at

least one hydrated inorganic salt having a transition temperature to a less hydrated form in the range 10° to 100° C., the improvement comprising that the inorganic salt hydrate is dispersed and suspended in a water-insoluble hydrogel formed from a water-soluble polymer having pendant acidic groups selected from the group consisting of carboxylic acid and sulphonic acid groups cross-linked with cations of a polyvalent metal.

4,209,414

DUAL-PURPOSE HYDRAULIC FLUID

Rosauro V. Holgado, Bala Cynwyd, and Philip Rakoff, Philadelphia, both of Pa., assignors to E. F. Houghton and Co., Norristown, Pa.

Continuation-in-part of Ser. No. 885,739, Mar. 13, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 13,721

Int. Cl.[2] C09K *5/00;* **C10M** *3/18, 3/26*

U.S. Cl. 252—75 **10 Claims**

1. A dual-purpose fluid for use as a hydraulic fluid and in metal cutting operations comprising:

(A) from about 50 to about 70 percent, by total weight of said fluid, of a water-soluble alkylene glycol selected from the group consisting of monoalkylene glycols having the formula $HO(C_nH_{2n})OH$ where n is an integer from 2 to 6, and polyoxyalkylene glycols;

(B) from about 10 to about 25 percent of an alkanolamine of the general formula $H_{3-x}N(ROH)_x$ in which R is an alkylene group containing from 2 to 3 carbon atoms and x is 1, 2 or 3;

(C) up to about 10 percent boric acid, and

(D) from about 2 to about 25 percent of a phosphate-modified condensation product obtained by reacting about 1.5 moles of a dialkanolamine of the formula $HN(C_nH_{2n}OH)_2$ in which n is 2 or 3, with about 1 mole of a fatty acid containing from 12to 18 carbon atoms, in the presence of about 0.03 moles of phosphoric acid, and being continued until the free fatty acid content of the reaction mixture has been reduced to at least about 5.8 percent.

4,209,415

ANTIFREEZE CONTAINING CARBOXYSILOXANE METAL SALTS AND HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 347

Int. Cl.[2] C09K *50/00*

U.S. Cl. 252—76 **3 Claims**

1. A single-phase antifreeze and coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and at least one organic basic buffer compound wherein said corrosion inhibitor is present in an amount of about 0.1 percent to about 10 percent by weight of said alcohol and is a water-soluble and alcohol-soluble metal salt of a carboxysiloxane consisting essentially of groups represented by the formula:

$$\begin{matrix} R_c' \\ | \\ SiO_{\frac{4-(b+c)}{2}} \end{matrix}$$

wherein M is a cation that imparts water and alcohol solubility to the siloxane, said cation being selected from a group consisting of the sodium, potassium, lithium and rubidium cations and the tetraorgano ammonium cations, a is the valence of the cation represented by M and has a value of at least one, R is a divalent hydrocarbon group containing from 0 to 1 $M_{1/a}OOC$— groups as substitutents, each $M_{1/a}OOC$— group is connected to the silicon atom through at least 2 carbon atoms of the group represented by R; R' is a monovalent hydrocarbon group, b has a value from 1 to 3 inclusive, c has a value from 0 to 2 inclusive, and (b+c) has a value from 1 to 3 inclusive, wherein said organic basic buffer is present in the amount of about 0.1 to about 1.5 percent by weight and is selected from the group consisting of ortho hydroxybenzoic acid, para hydroxybenzoic acid, and mixtures thereof, wherein said buffer serves to maintain the pH of said antifreeze concentrate above about 9 to about 11, and wherein said alcohol is selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol.

4,209,416

ANTIFREEZE CONTAINING AMINO SILANES, AMINO SILOXANES AND A HYDROXYBENZOIC ACID

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 464

Int. Cl.[2] C09K *50/00*

U.S. Cl. 252—76 **3 Claims**

1. A single-phase antifreeze and coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and a hydroxybenzoic acid pH buffer and wherein said concentrate contains a corrosion inhibiting amount of an inhibitor selected from the group consisting of:

(a) hydroxycarbonoxysilanes represented by the formula:

$$\begin{matrix} R_b^5 \\ | \\ Z_2NRSiX_{3-b-f} \end{matrix}$$

wherein Z is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing a substituent selected from the group consisting of the hydroxyl, amino, amido, ester, hydrocarbonoxy and cyano groups and divalent groups that are derived from oxirane compounds by the opening of the oxirane ring and that link the nitrogen atom to the silicon atom through a carbon to carbon to nitrogen bond; R is a divalent hydrocarbon group containing at least three carbon atoms; the Z_2N— group is attached to at least the third carbon removed from the silicon atom; R^5 is a member selected from the group consisting of the monovalent hydrocarbon groups and the $NH_2C_nH_{2n}$— groups where n has a value of at least 3; X is a member selected from the group consisting of the alkoxy and aroxy groups; b has a value from 0 to 2; f has a value from 0 to 2 and represents the number of said divalent groups represented by Z; and (3-b-f) has a value from 1 to 3;

(b) siloxanes consisting essentially of siloxane groups represented by the formula:

$$\begin{matrix} R_b^5 \\ | \\ Z_2'NRSiO_{\frac{3-b}{2}} \end{matrix}$$

wherein Z' is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing substituents selected from the group consisting of hydroxyl, amino, amido, ester, cyano and hydrocarbonoxy groups and R, R^5 and b have the above-defined meanings; and

(c) siloxanes consisting essentially of both the above-defined siloxane groups and silane groups having the formula:

$$R_e^6SiO_{\frac{4-e}{2}}$$

wherein R^6 is a monovalent hydrocarbon group and e has a value from 1 to 3, wherein said alcohol is selected from the

group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, wherein said pH buffer serves to maintain the pH above about 9 to about 11 and is selected from the group consisting of ortho and para hydroxybenzoic acid and mixtures thereof and is present in the proportion of about 0.1 to about 1.5 percent by weight based upon the weight of said concentrate, and wherein said corrosion inhibitor is present in the proportion of 0.01 percent to 10 percent by weight of said concentrate.

4,209,417

PERFUMED PARTICLES AND DETERGENT COMPOSITION CONTAINING SAME

David D. Whyte, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 13, 1976, Ser. No. 714,061
Int. Cl.[2] C11B 9/00; A61K 7/46
U.S. Cl. 252—174.11 **19 Claims**

1. Heavily perfumed particles having both immediate and long lasting perfume emitting properties consisting essentially of from 40% to 60% water-insoluble perfume, from 25% to 65% of a water-soluble polymer which will dissolve in water at a temperature of less than 100° C. and which is selected from the group consisting of:
polyvinyl alcohols,
polyethylene glycols,
polyvinyl pyrrolidones,
cellulose derivatives,
poly(acrylic acid),
poly(acrylic acid) derivatives,
polyacrylamides, and
poly(ethylene oxides),
and from about 0.5% to about 6.5% of an emulsifier selected from the group consisting of nonionic, anionic, and cationic emulsifiers, wherein said particles have an ultimate particle size of from 40 microns to 1400 microns and are comprised of a continuous polymer matrix having dispersed substantially uniformly therethrough perfume/emulsifier droplets of a diameter of from 0.01 microns to 0.5 microns wherein those droplets on the surface of the particle give an immediate perfume effect, those droplets just below the surface give a sustained release of perfume due to perfume migration to the surface and those droplets substantially within the matrix are released upon contact with water.

4,209,418

GELATIN BENZIMIDAZOLE BLENDS AS INHIBITORS FOR CARBOXYLIC ACIDS

James D. Anderson, Ambler, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 18, 1978, Ser. No. 925,832
Int. Cl.[2] C11D 7/08; C23G 1/06
U.S. Cl. 252—148 **21 Claims**

18. A process for cleaning water scale or other undesirable water-insoluble deposits from the interior surfaces of metal industrial equipment comprising contacting said deposits with an aqueous carboxylic acid cleaning solution which comprises water, carboxylic acid and a synergistic inhibitor blend comprising gelatin and benzimidazole.

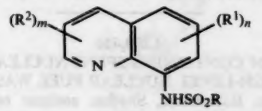
4,209,419

CERTAIN SULFONAMIDOQUINOLINES, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH SULFONAMIDOQUINOLINES AND METAL COMPLEXES

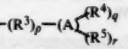
Michael J. Virnig, Roseville, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 652,005, Jan. 26, 1976, Def. Pub. No. T953,006.
This application Oct. 19, 1977, Ser. No. 843,534
Int. Cl.[2] C07D 215/40; C09K 3/00
U.S. Cl. 252—182 **60 Claims**

1. A metal complex of a sulfonamidoquinoline and a metal ion selected from the group consisting of Cu^{++}, Ni^{++}, Co^{++}, Zn^{++}, Cd^{++}, Hg^{++}, Ag^{+} and Pb^{++}, said sulfonamidoquinoline being selected from compounds of the structure

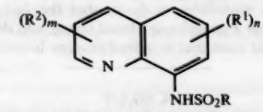


where R is selected from the group consisting of alkyl and alkenyl of 8 to 20 carbon atoms and

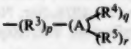


where R^3 is an alkylene of 1 to 20 carbon atoms, p is 0 or 1, A is a mono or bicyclic hydrocarbon radical wherein the ring or rings are 5 or 6 membered, q is a whole integer selected from 1, 2 and 3, r is 0 or 1 and q+r is equal to 1 to 3, R^4 is an alkyl or alkenyl of up to 20 carbon atoms such that the total number of carbon atoms in $(R^4)_q$ is at least 8 with the proviso that when q is 2 at least one R^4 contains 5 or more carbon atoms and when q is 2 or 3 and more than one of the R^4 groups are branched chain the branched chain groups are not on adjacent carbon atoms, R^5 is —Cl, —Br, $—NO_2$ or —O—R^6 wherein R^6 is a hydrocarbon group of from 1 to 20 carbon atoms, n is 0, 1 or 2 with the proviso that when n is 2 the R^1 substituents are not on adjacent carbon atoms, m is 0 or 1 and R^1 and R^2 are selected from the group consisting of hydrocarbon groups of from 1 to 5 carbon atoms, —Cl, —Br, $—NO_2$ and —O—R^6 and said metal complex being further characterized as having a solubility of at least 2.0% by weight in an essentially water-immiscible, liquid hydrocarbon solvent having a flash point of at least 150° F.

2. A composition of matter consisting essentially of a solution of a metal complex of a sulfonamidoquinoline in an essentially water-immiscible, liquid hydrocarbon solvent having a flash point of at least 150° F., said solution containing at least 2% by weight of the said metal complex, said metal of the complex being selected from the metal ions of the group consisting of Cu^{++}, Ni^{++}, Co^{++}, Zn^{++}, Cd^{++}, Hg^{++}, Ag^{+} and Pb^{++} and said sulfonamidoquinoline being selected from compounds of the structure



where R is selected from the group consisting of alkyl and alkenyl of 8 to 20 carbon atoms and



where R^3 is an alkylene of 1 to 20 carbon atoms, p is 0 or 1, A is a mono or bicyclic hydrocarbon radical wherein the ring or rings are 5 or 6 membered, q is a whole integer selected from 1, 2 and 3, r is 0 or 1 and q+r is equal to 1 to 3, R^4 is an alkyl or alkenyl of up to 20 carbon atoms such that the total number of carbon atoms in $(R^4)_q$ is at least 8 with the proviso that when q is 2 at least one R^4 contains 5 or more carbon atoms and when q is 2 or 3 and more than one of the R^4 groups are branched chain the branched chain groups are not on adjacent carbon

atoms, R^5 is —Cl, —Br, —NO_2 or —O—R^6 wherein R^6 is a hydrocarbon group of from 1 to 20 carbon atoms, n is 0, 1 or 2 with the proviso that when n is 2 the R^1 substituents are not on adjacent carbon atoms, m is 0 or 1 and R^1 and R^2 are selected from the group consisting of hydrocarbon groups of from 1 to 5 carbon atoms, —Cl, —Br, —NO_2 and —O—R^6.

4,209,420

METHOD OF CONTAINING SPENT NUCLEAR FUEL OR HIGH-LEVEL NUCLEAR FUEL WASTE

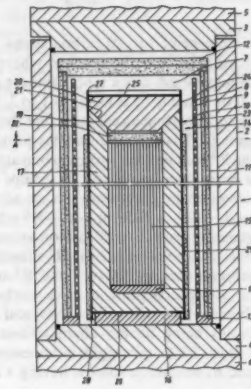
Hans Larker, Robertsfors, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Dec. 14, 1977, Ser. No. 860,557

Claims priority, application Sweden, Dec. 21, 1976, 7614376; Apr. 20, 1977, 7704488; Oct. 18, 1977, 7711709

Int. Cl.[2] G21F *9/28*

U.S. Cl. 252—301.1 W **12 Claims**



1. A method of isolating spent nuclear fuel or high-level nuclear fuel waste from the environment for an extended period of time, comprising the steps of forming an open container and a cover fitting the open end of the container from a ceramic powder material, compacting said container and said cover into bodies having a high density and strength by hot isostatic pressing, inserting spent nuclear fuel or high-level waste into said open container, placing said cover over said open end of said container, enclosing said open container and said cover in a gas-tight metal casing, joining said open container and said cover together by hot isostatic pressing into a homogeneous monolithic body so that the fuel or waste is enclosed within a completely closed space, and disposing said casing and said container in a final storage location.

4,209,421

METHOD OF PREPARING BODIES CONTAINING RADIOACTIVE SUBSTANCES

Wilfried Heimerl, Julich; Edwin Schiewer, and Amal K. De, both of Berlin, all of Fed. Rep. of Germany, assignors to Gelsenberg Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,279

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704147

Int. Cl.[2] G21F *9/28*

U.S. Cl. 252—301.1 W **5 Claims**

1. Process of providing radioactive substance in a form suitable for disposal of the radioactive substance, comprising incorporating glass particles containing said radioactive substance in molten metal so that the particles are embedded in the molten metal, the glass of said glass particles being suitable for conversion to glass ceramic, and heat treating the molten metal having the glass particles embedded therein to convert the glass of the glass particles to glass ceramic and provide glass ceramic particles containing the radioactive substance embedded in a metal matrix.

4,209,422

MULTICOMPONENT DEMULSIFIER, METHOD OF USING THE SAME AND HYDROCARBON CONTAINING THE SAME

Abraham A. Zimmerman, Summit, and Jack Ryer, East Brunswick, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 765,684, Feb. 4, 1977, abandoned. This application Jan. 6, 1978, Ser. No. 867,602

Int. Cl.[2] B01D *17/04*

U.S. Cl. 252—344 **15 Claims**

1. A multicomponent demulsifier comprising (a) an alkoxylated alkylphenol-formaldehyde resin wherein said alkyl may be one or more alkyl groups having from about 3 to about 12 carbon atoms and the alkoxylation of said resin is effected using about 1 to about 100 moles of one or more alkylene oxides per mole of OH radicals in said resin, said alkylene oxide having from about 2 to about 6 carbon atoms, and (b) at least two alkoxylated polyamines wherein the number of nitrogen atoms in the polyamines differ by at least two and wherein the alkoxylation of said polyamines is effected using from about 1 to about 100 moles of one or more alkylene oxides per atom of nitrogen in the polyamine and wherein said alkylene oxides have from about 2 to about 5 carbon atoms, the amount of alkoxylated alkylphenol-formaldehyde used varying from about 1.5:1 to about 3:1 parts by weight of said formaldehyde resin per part by weight of either the higher or lower nitrogen content alkoxylated polyamine and the amount of polyamines varying from about 0.5:1 to about 2:1 parts by weight of higher nitrogen content alkoxylated polyamine per part by weight of lower nitrogen content alkoxylated polyamine.

15. A hydrocarbon composition containing (a) an alkoxylated alkyl substituted phenol-formaldehyde resin wherein said alkyl substituent may be one or more alkyl groups having from about 3 to about 12 carbon atoms and the alkoxylation of said resin is effected using from about 1 to about 100 moles of one or more alkylene oxides per mole of OH radicals in said resin, said alkylene oxide having from about 2 to about 6 carbon atoms and (b) at least two alkoxylated polyamines wherein the number of nitrogen atoms in the polyamines differ by at least two and wherein the alkoxylation of said polyamines is effected using from about 1 to about 100 moles of one or more alkylene oxides per atom of nitrogen in the polyamine and wherein said alkylene oxides have from about 2 to about 5 carbon atoms, the amount of alkoxylated alkylphenol-formaldehyde used varying from about 1.5:1 to about 3:1 parts by weight of said formaldehyde resin per part by weight of either the higher or lower nitrogen content alkoxylated polyamine and the amount of polyamines varying from about 0.5:1 to about 2:1 parts by weight of higher nitrogen content alkoxylated polyamine per part by weight of lower nitrogen content alkoxylated polyamine.

4,209,423

PRODUCTION OF ACID ANHYDRIDES AND CATALYSTS THEREFOR

Graham J. Hutchings, and Raymond Higgins, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1978, Ser. No. 906,251

Claims priority, application United Kingdom, May 23, 1977, 21610/77; Jan. 30, 1978, 3686/78

Int. Cl.[2] B01J *27/14*; C07D *307/14*

U.S. Cl. 252—435 **9 Claims**

1. A process of producing a catalyst for the production of acid anhydrides which comprises reacting a vanadium compound with phosphoric acid, producing a solid vanadium/-phosphorus mixed oxide catalyst precursor, contacting the solid precursor with an acid stronger than phosphoric acid

(judged in terms of its first dissociation constant in water) at a concentration of at least 3 N, recovering the precursor and extracting it with water or with another solvent for phase E until substantially only material insoluble in water or the said solvent is left, separating the precursor and producing a phase transition to a catalytically active form by heating it, said phase E exhibiting the x-ray spectrum as follows:

d (Angstrom)	20 (degrees)	Relative* Intensity
6.34	14.0	100
4.49	19.8	5
3.98	22.3	58
3.58	24.9	64
3.37	26.4	28
3.17	28.2	87
2.98	30.0	17
2.83	31.6	59
2.48	36.2	21
2.37	37.9	5
2.10	43.1	34
2.00	45.3	12
1.90	47.9	6
1.87	48.8	6
1.76	52.0	8
1.69	54.4	5
1.68	54.5	7
1.58	58.2	12
1.54	60.1	8

4,209,424

CATALYST FOR MANUFACTURING AMINES FROM ALCOHOLS

Yannick Le Goff, Saint Nazaire; Michel Senes, La Baule, and Christian Hamon, Saint Nazaire, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Products Chimiques, Paris, France

Continuation-in-part of Ser. No. 904,285, May 9, 1978, abandoned. This application Dec. 5, 1978, Ser. No. 966,736

Claims priority, application France, Dec. 12, 1977, 77 37346; Jul. 4, 1978, 78 19875

Int. Cl.[2] B01J *21/04, 23/72, 23/74, 23/46*

U.S. Cl. 252—474 **10 Claims**

1. Amination catalyst comprising at least one active metal from the group of transition metals consisting of nickel, cobalt and copper, uniformly combined with a refractory microporous substrate with a specific surface between 10 and 300 m^2/g and a pore diameter less than 5,000 A, wherein the transition metal content represents 30–70% of the total catalyst weight.

4,209,425

CONDUCTIVE COATING COMPOSITION

Kingso C. Lin, and Donald J. Hammond, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 22, 1977, Ser. No. 789,914

The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.

Int. Cl.[2] H01B *1/06*

U.S. Cl. 252—510 **12 Claims**

1. An aqueous composition comprising about 5 to about 15 percent by weight of conductive particles, about 3 to about 5 percent by weight of surfactant and about 3 to about 10 percent by weight of a thixotropic gelling agent selected from the

group consisting of acid-containing acrylic emulsion copolymers and cellulose ethers.

4,209,426

POLYPEPTIDES RELATED TO SOMATOSTATIN

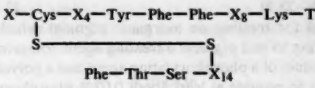
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,843

Int. Cl.[2] C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—8 **7 Claims**

1. A polypeptide of the formula:



its linear precursor or a non-toxic acid addition salt thereof, in which:

X is hydrogen, Ala-Gly, Ala-D-Ala, Gly-Gly, Gly-Gly-Gly, lower alkanoyl or benzoyl;

X_4 is Arg or His;

X_8 is L-Trp or D-Trp;

and

X_{14} is Cys or D-Cys.

4,209,427

FLAME RETARDANT POLYCARBONATE COMPOSITION

Joseph B. Williams, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1977, Ser. No. 865,321

Int. Cl.[2] C08L *69/00*

U.S. Cl. 260—17.5 **15 Claims**

1. A flame retardant polycarbonate composition comprising in admixture an aromatic carbonate polymer and a flame retardant additive chosen from the group consisting of alkali metal lignosulfonates, alkaline earth metal lignosulfonates, and mixtures thereof.

4,209,428

FOUNDRY BINDERS

David Dumolo, Dudley, England, assignor to Fordath Limited, West Bromwich, England

Filed Sep. 26, 1977, Ser. No. 836,924

Claims priority, application United Kingdom, Jul. 21, 1977, 30608/77

Int. Cl.[2] C08G *18/06;* **C08K** *5/10;* **C08L** *91/00*

U.S. Cl. 260—18 TN **12 Claims**

1. A foundry composition from which a foundry mould or core is formed, the composition comprising a foundry aggregate, a polyisocyanate, a polyfunctional phenol and an ali-

phatic polyol having more than two—OH groups, wherein the weight of the polyol is within the range 5% to 7% of the weight of the polyfunctional phenol.

4,209,429

PROCESS FOR PRODUCING INTERNALLY PLASTICIZED PHENOLIC RESINS

Susumu Konii, Tokyo; Yukio Yoshimura, Saitama; Ken Nanaumi, Shimodate; Kohei Yasuzawa, Shimodate; Takeshi Yoshida, Shimodate, and Toyotaro Shinko, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Aug. 28, 1978, Ser. No. 937,115

Claims priority, application Japan, Aug. 29, 1977, 52-104034; Aug. 29, 1977, 52-104035; Aug. 29, 1977, 52-104036; Aug. 29, 1977, 52-104037

Int. Cl.[2] **C08G** *8/10, 8/20, 8/32*

U.S. Cl. 260—19 R **24 Claims**

1. A process for producing an internally plasticized phenolic resin which comprises reacting a phenol-formaldehyde resin containing less than 4% by weight of unreacted free monohydric phenol or phenols with an epoxidized vegetable oil, or with an epoxidized vegetable oil and formaldehyde, with heating.

4,209,430

TREATMENT OF INORGANIC PIGMENTS

Leon Weber, Baltimore, Md., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,301

Int. Cl.[2] **C08F** *10/02, 10/06;* **C08K** *9/04*

U.S. Cl. 260—23 H **27 Claims**

1. Process for treating an inorganic pigment which comprises applying to said pigment a treating agent comprising the reaction product of a phosphorylating agent and a polyolefin in a proportion to provide at least about 0.02% phosphorus content by weight of said pigment.

4,209,431

ALKYL-SUBSTITUTED HYDROQUINONE CARBONATE ESTERS AS STABILIZERS FOR OLEFIN POLYMERS

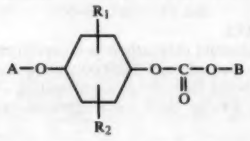
John R. Clark, Nutley, and Michael H. Fisch, Wayne, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Feb. 3, 1978, Ser. No. 874,979

Int. Cl.[2] **C08K** *5/11;* **C07C** *69/00*

U.S. Cl. 260—23 H **35 Claims**

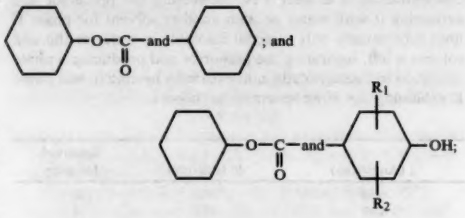
1. An alkyl-substituted hydroquinone carbonate ester having a molecular weight within the range from 342 to 646 and defined by the formula:



wherein:

R_1 and R_2 are selected from the group consisting of t-butyl and t-amyl; and

A and B are selected from the group consisting of hydrogen and



respectively.

16. Alpha-monoolefin polymer compositions having an enhanced resistance to oxidative and thermal degradation consistig essentially of an alpha-monoolefin polymer and at least one alkyl-substituted hydroquinone carbonate ester according to claim 1.

4,209,432

PROCESS FOR RENDERING BUILDING MATERIALS HYDROPHOBIC

Michael Roth, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 749,142, Dec. 9, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,494

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558184

Int. Cl.[2] **C08L** *83/04*

U.S. Cl. 260—29.2 M **3 Claims**

1. An improved process for imparting hydrophobic properties to building materials by applying a solution containing a solvent and an organosilicon compound dissolved therein to the surface of said material, in which the organosilicon compound is present in an amount of from 0.2 to 25 percent by weight based on the weight of the organosilicon compound and solvent, the improvement which comprises adding to the solution from 0.01 to 0.5 percent by weight based on the total weight of the solution, of a filler having a surface area of at least $50/m^2/gm$.

4,209,433

METHOD OF BONDING PARTICLE BOARD AND THE LIKE USING POLYISOCYANATE/PHENOLIC ADHESIVE

Chung-Yun Hse, Pineville, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 19, 1978, Ser. No. 970,944

Int. Cl.[2] **C08L** *61/10*

U.S. Cl. 260—29.3 **7 Claims**

1. In a method of fabricating particle board and the like, wherein an organic polyisocyanate/phenolic resin adhesive is applied to wood furnish with subsequent application of heat and pressure to form the desired product, the improvement comprising the steps of:

applying said polyisocyanate/phenolic resin adhesive wherein said adhesive comprises:

(i) from about 10% to about 50% by weight of the organic polyisocyanate; and

(ii) from about 50% to about 90% by weight of the phenolic resin;

wherein said application comprises the steps of:

(a) applying first to the wood furnish the organic polyisocyanate; and

(b) applying next to the wood furnish the phenolic resin; and

applying next to the resulting wood furnish/adhesive product sufficient heat and pressure to form the desired product.

4,209,434

DENTAL CEMENT CONTAINING POLY(CARBOXYLIC ACID), CHELATING AGENT AND GLASS CEMENT POWDER

Alan D. Wilson, Liphook, and Stephen Crisp, Hounslow, both of England, assignors to National Research Development Corporation, England

Continuation of Ser. No. 595,039, Jul. 11, 1975, abandoned, which is a continuation of Ser. No. 350,885, Apr. 13, 1973, abandoned. This application Sep. 6, 1977, Ser. No. 830,776

Claims priority, application United Kingdom, Apr. 18, 1972, 17880/72

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.6 H 22 Claims

8. A cement composition consisting essentially of an intimately blended mixture of an ion-leachable surgically acceptable glass cement powder, a water soluble poly(carboxylic acid) having a relative viscosity of from 1.05 to 2.00 measured with a capillary viscometer of a 1% by weight to volume solution of the poly(carboxylic acid) in twice molar sodium hydroxide solution at 25° C. relative to the viscosity of the twice molar sodium hydroxide solution and a water-soluble chelating agent selected from the group consisting of compounds containing both chelating hydroxyl and carboxyl groups and metal chelates, the ratio of cement powder to poly(carboxylic acid) being from 1:1 to 10:1, and said chelating agent being present in an amount of at least 0.01% by weight based on the weight of the poly(carboxylic acid) and sufficient to increase the rate of hardening of the cement as compared to the rate of hardening of the cement in the absence of said chelating agent, said cement composition being characterized by forming a poly(carboxylate) cement upon the addition of water thereto.

4,209,435

DISPERSION PREPARATION

Alan J. Backhouse, Monks Wood, Monks Close, St. Mary's Hill, South Ascot, Berkshire, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 2, 1978, Ser. No. 947,405

Claims priority, application United Kingdom, Oct. 12, 1977, 42457/77

Int. Cl.[2] C08A *33/10*

U.S. Cl. 260—29.6 RW 11 Claims

1. A method of preparing a stable dispersion in an aqueous medium or particles of polymer, the method comprising the steps of:

(i) forming a stable dispersion of particles of a first polymer in a non-aqueous liquid in the presence of a steric stabiliser for the particles, the first polymer being insoluble in both the non-aqueous liquid and in water;

(ii) polymerising in the same non-aqueous liquid, in the presence of the particles of the first polymer and of a steric stabiliser, one or more monomers capable of giving rise to a second polymer which is soluble in the chosen aqueous medium;

(iii) transferring the resulting polymer particles from the non-aqueous medium to the said aqueous medium.

4,209,436

PROCESS FOR THE REMOVAL OF NON-CONVERTED MONOMERS FROM A COPOLYMER OF ACRYLONITRILE

Henricus M. J. C. Creemers, Geleen, and Hubertus J. G. Henskens, Spaubeek, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 15, 1978, Ser. No. 969,979

Claims priority, application Netherlands, Dec. 15, 1977, 7713885

Int. Cl.[2] C08F *6/16*

U.S. Cl. 260—29.7 PT 8 Claims

1. Process for the removal of unconverted monomers from a copolymer of acrylonitrile with styrene and/or (α-methyl)styrene or a copolymer of said monomers grafted on a rubber, by a treatment with steam, consisting essentially in

subjecting a latex of said copolymer, obtained from a polymerization stage, to a continuous treatment with steam including

atomizing said latex to form a gas-liquid mixture consisting essentially of latex droplets dispersed in a gas phase and thereafter passing the said gas-liquid mixture through a gas-liquid contacting device,

separating the gas phase from said mixture,

at least partially condensing this separated gas phase,

separating the resulting condensate into an organic and an aqueous liquid phase,

returning the thus-separated organic phase to the polymerization process, and

recovering said copolymer as a latex emulsion from said mixture.

4,209,437

EXTRACTION RESISTANT LIQUID ETHYLENE-VINYL ACETATE COPOLYMER PLASTICIZED POLYVINYL CHLORIDE RESIN

Joseph Fischer, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,465

Int. Cl.[2] C08K *5/10, 5/11*

U.S. Cl. 260—31.8 R 12 Claims

1. A plasticized vinyl chloride resin containing from about 10 to about 60 parts by weight of a plasticizer mixture comprising from about 30 to about 70 parts by weight of a liquid ethylene-vinyl acetate copolymer and from about 70 to about 30 parts by weight of at least one non-polymeric ester.

4,209,438

ELECTRICAL INSULATING COATING COMPOSITION

Yasunori Okada, and Junzó Fukuhara, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Nov. 13, 1978, Ser. No. 959,503

Claims priority, application Japan, Nov. 14, 1977, 52-136459

Int. Cl.[2] C08K *5/11*

U.S. Cl. 260—31.8 XA 7 Claims

1. An electrical insulating coating composition which comprises a resin prepared by reacting one or more polyvalent carboxylic acids or their derivatives with one or more polyhydric alcohols in which trihydric or higher polyhydric alcohols are used in an amount of 35% by equivalent or more based on the total hydroxyl group equivalent of the polyhydric alcohols, and as a solvent for said resin one or more carboxylic acid esters of the formula:

$$R_1OOCR_2COOR_3$$

wherein R_1 and R_3 are independently a lower alkyl group; and R_2 is $-(CH_2)_m-$ wherein m is an integer from 1 to 10.

4,209,439

STABILIZATION OF VINYL RESINS

Charles Pigerol, Saint-Ouen; Marie-Madeleine Chandavoine, and Paul de Cointet deFillain, both of Sisteron, all of France, assignors to Labaz, Paris, France

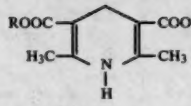
Filed Oct. 12, 1978, Ser. No. 950,718

Claims priority, application France, Oct. 14, 1977, 77 30991; Jun. 29, 1978, 78 19518; Aug. 11, 1978, 78 23757

Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 N 8 Claims

1. A synthetic resin composition comprising a vinyl chloride homo-polymer or copolymer and, in an amount at least sufficient to impart stabilisation against degradation by both heat and light, a 1,4-dihydropyridine derivative represented by the general formula:



wherein R represents a straight or branched-chain saturated or unsaturated alkyl radical containing from 9 to 22 carbon atoms.

4,209,440

ASSOCIATIONS FOR STABILIZING VINYL RESINS

Charles Pigerol, Saint-Ouen; Marie-Madeleine Chandavoine, and Paul de Cointet de Fillain, both of Sisteron, all of France, assignors to Labaz, Paris, France

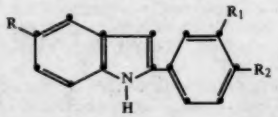
Filed Oct. 16, 1978, Ser. No. 951,853

Claims priority, application France, Oct. 28, 1977, 77 32662

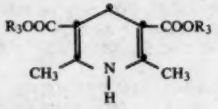
Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 N **12 Claims**

1. New association for stabilizing vinyl resins comprising a compound of the general formula:



wherein R_1 and R_2, which are the same or different, each represent a hydrogen atom, a branched- or straight-chain alkyl or alkoxy radical containing from 1 to 12 carbon atoms or a hydroxy radical, R represents a hydrogen atom or a branched- or straight-chain alkyl or alkoxy radical containing from 1 to 4 carbon atoms, and a compound of the general formula:



wherein R_3 represents a branched- or straight-chain alkyl radical containing from 1 to 22 carbon atoms, a branched- or straight-chain alkenyl or alkynyl radical containing from 3 to 11 carbon atoms, an aralkyl radical optionally substituted on the para- or ortho-position by a halogen atom or by a methyl or methoxy radical, a radical $R_4—O(CH_2)_n—$ wherein n is 2, 3 or 4 and R_4 represents a branched- or straight-chain alkyl radical containing from 1 to 4 carbon atoms or a phenyl radical.

9. Polyvinyl chloride resin containing as stabilizer an association according to claim **1**.

4,209,441

ANTI-GASTRIC SECRETION POLYPEPTIDE

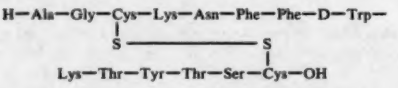
Milton Lapidus, Rosemont, and Victor M. Garsky, Radnor, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,504

Int. Cl.[2] C07C *103/52*; H61K *37/00*

U.S. Cl. 260—112.5 S **1 Claim**

1. A polypeptide of the formula:



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and pharmaceutically acceptable salts thereof.

4,209,442

ANGIOTENSIN II ANALOGS AND PROCESS FOR THE PREPARATION THEREOF

Lajos Kisfaludy; Györgyne Nyeki nee Olga Kuprina; Laszlone Szirmai nee Maria Sarközi; Egon Karpati; Katalin Gidai, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Jul. 11, 1978, Ser. No. 923,663

Claims priority, application Hungary, Jul. 18, 1977, RI 641

Int. Cl.[2] C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **7 Claims**

1. A peptide of the formula:

X-Arg-Val-Tyr-Ile-His-Pro-Y

wherein

X is hydroxyacetyl or α-hydroxypropionyl, and

Y is leucyl, isoleucyl, alanyl, or threonyl or an acid addition salt or a complex thereof.

4,209,443

PROCESS FOR SEPARATING PHARMACEUTICALLY ACTIVE DIINDOLE ALKALOIDS

Karola Jovánovics; Lajos Dancsi; Sándor Eckhardt; Csaba Lörincz; János Sugár; Zsuzsa Relle née Somfai; Kálman Szasz; József Tamas, and Aron Szöllösy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 762,235, Feb. 13, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,418

Claims priority, application Hungary, Feb. 13, 1976, RI 585

Int. Cl.[2] C07D *519/04*

U.S. Cl. 260—244.4 **2 Claims**

1. A process for separating vinblastine from 4-deacetoxy vinblastine which comprises the steps of:

(a) subjecting a mixture of diindole alkaloids including vinblastine and 4-deacetoxy vinblastine to deacetylation with a concentrated halo acid or an alkali carbonate to convert the vinblastine in the mixture to deacetyl vinblastine; and

(b) subjecting the mixture obtained in step (a) to a single chromatographic separation and recovering separately from the single chromatographic separation, a first component containing substantially all of the 4-deacetoxy vinblastine and a second component containing the deacetyl vinblastine

(c) reacylating said deacetyl vinblastine of said second component with acetic anhydride to convert it to vinblastine.

4,209,444

NEW PROSTAGLANDIN-LIKE DIKETALS

Manfred Baumgarth; Dieter Orth; Hans-Eckart Radunz; Reinhard Lissner, and Jürgen Maisenbacher, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

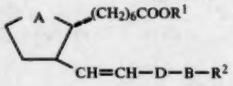
Filed Nov. 29, 1977, Ser. No. 855,591

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654113

Int. Cl.[2] C07C *177/00*

U.S. Cl. 260—338 **13 Claims**

1. A compound of the formula



the mirror image, racemic mixtures and physiologically acceptable salts thereof

wherein A and D each independently is an open ketal group of up to 5 C-atoms or a cyclic ketal group of up to 6 C-atoms; B is $-CH_2-$, $-CH(CH_3)-$, $-C(CH_3)_2-$, $-CH_2CH_2-$, $-CH(CH_3)CH_2-$, $-C(CH_3)_2CH_2-$ or $-CH_2O-$; R^1 is H or alkyl of 1–4 C-atoms; and R^2 is alkyl of 3 to 5 C-atoms, phenyl or phenyl substituted one to three times by F, Cl, CF_3, OH, OCH_3, OC_2H_5, or alkyl of 1 to 3 carbon atoms.

4,209,445

PROCESS FOR THE PREPARATION OF PIPERONYLIDENECROTONIC ACID AMIDES

Hermann Oediger, and Andreas Schulze, both of Cologne, Fed. Rep. of Germany, assignors to Haarman & Reimer GmbH, Holzminden, Fed. Rep. of Germany

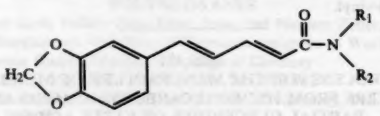
Filed Dec. 13, 1978, Ser. No. 969,113

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757483

Int. Cl.[2] C07D *317/44*

U.S. Cl. 260—340.5 R **6 Claims**

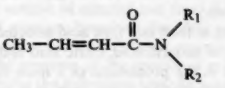
1. A process for the preparation of a piperonylidenecrotonic acid amide of the formula



in which

R_1 and R_2 independently of one another represent hydrogen or an optionally substituted aliphatic, araliphatic or aromatic hydrocarbon radical, or, together with the nitrogen atom, form a heterocyclic ring, with the proviso that R_1 and R_2 do not simultaneously denote hydrogen,

comprising reacting piperonal with a crotonic acid amide of the formula



in which

R_1 and R_2 have the meaning indicated above, in the presence of a hydroxide of the formula

$$A^+ OH^-$$

in which

A^+ represents a quaternary ammonium or phosphonium group or an alkali metal complex of a crown ether, podand or crytand,

and a polar aprotic or polar, sterically hindered protic organic solvent which is inert under the reaction conditions.

4,209,446

PROCESS FOR THE PREPARATION OF PIPERONYLIDENECROTONIC ACID AMIDES

Andreas Schulze, and Hermann Oediger, both of Cologne, Fed. Rep. of Germany, assignors to Haarman & Reimer GmbH, Holzminden, Fed. Rep. of Germany

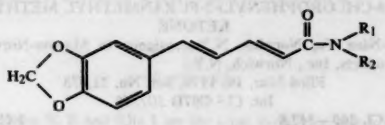
Filed Dec. 13, 1978, Ser. No. 969,114

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757506

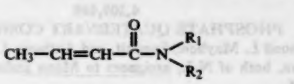
Int. Cl.[2] C07D *317/44*

U.S. Cl. 260—340.5 R **3 Claims**

1. A process for the preparation of a piperonylidenecrotonic acid amide of the formula



in which R_1 and R_2 independently of one another represent hydrogen or an optionally substituted aliphatic, araliphatic or aromatic hydrocarbon radical, or, together with the nitrogen atom, form a heterocyclic ring, with the proviso that R_1 and R_2 do not simultaneously denote hydrogen, comprising reacting piperonal with a crotonic acid amide of the formula



in which R_1 and R_2 have the meaning indicated above, in the presence of 0.05 to 0.5 mol of an alkali metal hydroxide per mol of piperonal and a dipolar aprotic diluent which is inert under the reaction conditions.

4,209,447

IMIDAZOLE DERIVATIVES AND INTERMEDIATES IN THEIR PREPARATION

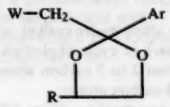
Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 774,290, Mar. 4, 1977, Pat. No. 4,139,540, which is a continuation-in-part of Ser. No. 710,994, Aug. 2, 1976, abandoned, which is a division of Ser. No. 619,863, Oct. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 544,157, Jan. 27, 1975, Pat. No. 3,936,470. This application Dec. 1, 1978, Ser. No. 965,722

Int. Cl.[2] C07D *317/10*

U.S. Cl. 260—340.9 R **9 Claims**

1. A chemical compound having the formula:



wherein:

W is halo;

Ar is a member selected from the group consisting of phenyl, substituted phenyl, and naphthyl; and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, loweralkyl, loweralkyloxy, nitro and cyano; and

R is a member selected from the group consisting of aryl, arylloweralkyl, aryloxymethyl, and arylthiomethyl, wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, naphthyl and mono- and di-halonaphthyl, and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, loweralkyl, loweralkyloxy, cyano, nitro, phenyl, and phenylmethyl; provided that when more than one substituents are present only one thereof may be selected from the group consisting of phenyl and phenylmethyl; provided that when said Ar is phenyl, then said R is other than phenyl; provided that said arylloweralkyl excludes arylmethyl; and further provided that when R is aryloxymethyl, Ar is other than naphthyl, nitrophenyl, cyanophenyl, loweralkylphenyl, or loweralkoxyphenyl.

4,209,448
5-(4-CHLOROPHENYL)-2-FURANMETHYL METHYL KETONE

Chia-Nien Yu, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,473
Int. Cl.[2] C07D 307/46
U.S. Cl. 260—347.8 1 Claim

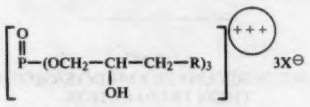
1. The compound 5-(4-chlorophenyl)-2-furanmethyl methyl ketone.

4,209,449
PHOSPHATE QUATERNARY COMPOUNDS

Raymond L. Mayhew, Summit, and Anthony J. O'Lenick, Fairlawn, both of N.J., assignors to Mona Industries, Paterson, N.J.

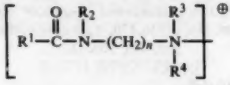
Filed Nov. 30, 1978, Ser. No. 965,458
Int. Cl.[2] A23J 7/00; C07F 9/02; C11C 3/00
U.S. Cl. 260—403 15 Claims

1. Phosphate quaternary compound of the formula



wherein

R is an amidoamine moiety of the formula



R^1 is alkyl, alkenyl, alkoxy, or hydroalkyl of from 5 to 22 carbon atoms each, or aryl or alkary of up to 20 carbon atoms,

R^2 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbons atoms each or cycloalkyl of up to 6 carbon atoms, preferably of from 2 to 5 carbon atoms, or polyoxyalkalene of up to 10 carbon atoms;

R^3 and R^4, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms; in addition, R^3 and R^4 taken together with the nitrogen to which they are attached, may represent an N-heterocycle;

n is an integer from 2 to 12; and

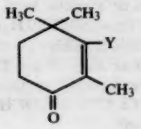
X is an anion.

4,209,450
INTRODUCTION OF A CARBONYL GROUP INTO A CYCLOHEXENE RING

Hagen Jaedicke, Ludwigshafen, and Joachim Paust, Neuhofen, both of Fed. Rep. of Germany, assignors to BASK Aktiengesellschaft, Fed. Rep. of Germany

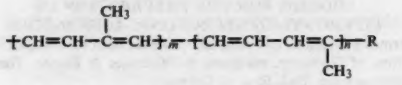
Filed Jan. 10, 1978, Ser. No. 868,272
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 2704406
Int. Cl.[2] C09F 5/08; C11C 3/00; C07C 45/00, 49/00
U.S. Cl. 260—410 7 Claims

7. A polyene compound of the formula



II

where Y is



where m is 1 or 2 and n is 0, 1, 2, 3 or 4 and R is methyl, carboxyl, alkanoyl of 2 to 4 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, alkoxymethyl of 2 to 4 carbon atoms, alkanoyloxymethyl of 3 or 4 carbon atoms, β-formylvinyl or β-(2,6,6-trimethyl-cyclohex-1-en-3-onyl)-vinyl, with the proviso that n is not 0 if R is carboxyl or methoxycarbonyl, and m and n are not both 2 if R is β-(2,6,6-trimethylcyclohex-1-en-3-onyl)-vinyl.

4,209,451
PROCESS FOR THE MANUFACTURE OF MIXED ESTERS FROM HYDROXYCARBOXYLIC ACIDS AND PARTIAL GLYCERIDES OF FATTY ACIDS

Peter Hameyer, and Theodor Tomczak, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,988
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732210
Int. Cl.[2] C11C 3/02
U.S. Cl. 260—410.8 5 Claims

1. A method for the manufacture of mixed esters from hydroxycarboxylic acids and partial glycerides of fatty acids which comprises:

(a) esterifying at least one fruit acid selected from the group consisting of tartaric acid, citric acid and malic acid with lactic acid in the proportion of 1 mole of fruit acid to at least 0.5 moles of of lactic acid at a temperature from about 110° to 165° C. and removing the water of reaction during the reaction; and

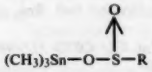
(b) esterifying the resulting reaction product at 110° to 140° C. with a partial glyceride of a fatty acid in a molar ratio of 1 mole of the fruit acid to 0.3 to 1 mole of the partial glyceride of the fatty acid and removing the water of reaction during this reaction.

4,209,452
ORGANOTIN SULFINATES AS INSECTICIDES AND ACARICIDES

Richard J. Strunk, Cheshire; Winchester L. Hubbard, Woodbridge, and Shih-Yu Ma, Cheshire, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

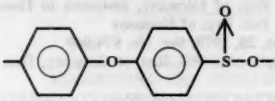
Division of Ser. No. 691,186, May 28, 1976, Pat. No. 4,089,972. This application Feb. 16, 1978, Ser. No. 878,203
Int. Cl.[2] C01F 7/22
U.S. Cl. 260—429.7 8 Claims

1. An organotin compound having the general formula



wherein R is selected from the group consisting of (1) alkyl-

phenyl in which the alkyl substituent has 4 to 10 carbon atoms, (2) cycloalkylphenyl, (3) 2,5 dichlorophenyl, and



(4)

4,209,453

ANTIMONY TRIS(DIHYDROCARBYL PHOSPHITE) AND PREPARATION THEREOF

Brent J. Bertus; Dwight L. McKay, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1978, Ser. No. 926,695
Int. Cl.[2] C07F 9/92
U.S. Cl. 260—446 5 Claims

1. An antimony tris(dihydrocarbyl phosphite).

4,209,454

PREPARATION OF HYDROCARBONOXY CONTAINING POLYSILOXANES

Werner Graf; Volker Frey; Peter John, and Norbert Zeller, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 973,982
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806036
Int. Cl.[2] C07F 7/04, 7/18
U.S. Cl. 556—457 5 Claims

1. An improved process for preparing polysiloxanes having hydrocarbon radicals bonded to silicon atoms via oxygen by reacting a halosilane with an alcohol and water in the presence of an organopolysiloxane, the improvement which comprises continuously introducing the organopolysiloxane, alcohol, water and an acid catalyst which promotes the condensation of Si-bonded condensable groups into a reactor equipped with a column in such an amount that the reactor always contains at least 5 percent by weight of alcohol and from 0.001 to 5 percent by weight of catalyst, based on the total weight of the alcohol, catalyst and organopolysiloxane present in the reactor, maintaining the contents of the reactor at reflux temperature while introducing the halosilane into the column at least 1 meter above the bottom of the column while continuously removing the organopolysiloxane from the reactor at the same rate as it is formed.

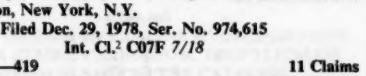
4,209,455

AMINOORGANOSILICON ACYLAMINO COMPOUNDS

Enrico J. Pepe, Amawalk, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

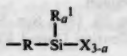
Filed Dec. 29, 1978, Ser. No. 974,615
Int. Cl.[2] C07F 7/18
U.S. Cl. 556—419 11 Claims

1. An aminoorganosilicon acylamino compound having the formula



Wherein:

X is an alkoxy radical having 1 to 6 carbon atoms; R is a divalent alkylene radical having 1 to 4 carbon atoms; R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms; R^2 is a divalent alkylene radical having 2 to 4 carbon atoms; R^3 is a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 20 carbon atoms or a phenyl radical; R^4 is a radical selected from the group consisting of an alkyl radical having 1 to 20 carbon atoms, a phenyl radical or a silyl radical of the formula:



Wherein X, R and Rhu 1 are the same as defined above; Q is a radical selected from the group consisting of hydrogen, an alkyl radical of 1 to 4 carbon atoms, a phenyl radical or an ester radical of the formula —$COOR^5$ wherein R^5 is an alkyl radical having 1 to 4 carbon atoms; and wherein a has a value of 0 to 2 and t and x each have a value of 0 to 4, with the proviso that when x is at least 1, R^4 can also be hydrogen.

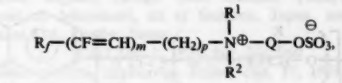
4,209,456

FLUORINE-CONTAINING ALKYL-SULFATO-BETAINES AND PROCESSES FOR THEIR MANUFACTURE

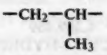
Siegfried Billenstein, Burgkirchen, and Winfried Ehrl, Neuötting, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,870
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749329
Int. Cl.[2] C07C 141/10
U.S. Cl. 260—458 F 9 Claims

1. Fluorine-containing alkyl-sulfato-betaines of the formula

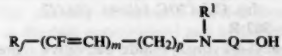


in which R_f denotes a perfluoroalkyl radical with 3 to 16 C atoms, R^1 denotes an alkyl radical with 1 to 4 C atoms, R^2 denotes an alkyl radical with 1 to 4 C atoms, Q denotes the alkylene radicals —CH_2CH_2— or



m denotes the numbers 0 or 1 and, if m is 0, p is an integer from 1 to 4 and, if m is 1, p is the number 1.

3. Process for the manufacture of fluorine-containing alkyl-sulfato-betaines as claimed in claim 1, which comprises first reacting a compound of the formula



in which R_f, Q, m and p are as defined in claim 1, with at least one known sulfating agent at −30° to +60° C. in the presence of at least one solvent (a) which dissolves the abovementioned amine and does not react with the sulfating agent, dissolving the resulting product, after removing the solvent (a), in at least one polar solvent (b), neutralizing the solution with at least one known alkali and then reacting the neutral solution at 40° to 130° C. and under a pressure of about 1 to about 6 bars with a compound of the formula R_2Z, in which Z is Cl, Br, I or —OSO_2OR^2 and R^2 is as defined in claim 1.

4,209,457

PRODUCTION OF HALOGENATED BENZONITRILES

George Fuller, Bristol, England, assignor to I.S. C. Chemicals Limited, London, England

Filed Jan. 29, 1979, Ser. No. 7,596

Claims priority, application United Kingdom, Jan. 28, 1978, 3576/78

Int. Cl.[2] C07C *121/52*

U.S. Cl. 260—465 G 8 Claims

1. A process for the production of a fluorobenzonitrile comprising heating a chlorobenzonitrile having a chlorine atom in a position selected from the ortho- and para-positions with respect to a nitrile group with potassium fluoride at a temperature between 200° and 250° C. in the presence of sulpholane the molar ratio of sulpholane to chlorobenzonitrile in the reaction mixture being between 1:1 and 6:1 and separating the sulpholane from the reactions products by distillation.

4,209,458

FLUORINATED PHTHALONITRILES

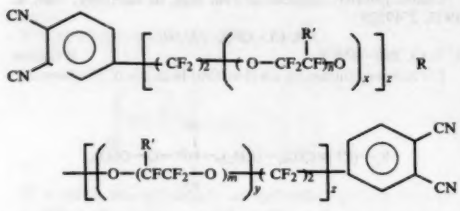
Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1979, Ser. No. 26,863

Int. Cl.[2] C07C *121/60, 121/75*

U.S. Cl. 260—465 F 8 Claims

1. A fluorinated phthalonitrile of the general formula:



wherein R' is F or CF_3, R is $(CF_2)_p$, m is 1 or 2, n is 1 or 2, p is an integer from 3 to 30, x is 1, 2, or 3, y is 1, 2, or 3 and z is 0 or 1.

4,209,459

NOVEL L-LEUCYL-4-HYDROXYANILIDE DERIVATIVES

Takeshi Nagasawa; Katsumasa Kuroiwa, both of Koriyama; Tadami Akatsuka, Tsuchiura; Osamu Kodama, Ibaraki, and Mitoshi Shimamoto, Funabashi, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima and Iatron Laboratories, Inc., Tokyo, both of, Japan

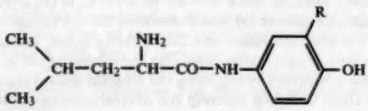
Filed May 4, 1979, Ser. No. 36,094

Claims priority, application Japan, Jun. 1, 1978, 53/66274

Int. Cl.[2] C07C *143/44, 101/72*

U.S. Cl. 260—507 R 3 Claims

1. An L-leucyl-4-hydroxyanilide derivative represented by the general formula,



(wherein R represents a carboxyl group or a sulfo group) or an acid addition salt thereof.

4,209,460

PRODUCTION OF PURE ACETYL CHLORIDE

Alexander Ohorodnik; Eberhard Auer, and Klaus Gehrmann, all of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 974,069

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758682

Int. Cl.[2] C07C *51/58, 51/42*

U.S. Cl. 260—544 Y 2 Claims

1. A process for making pure acetyl chloride containing less than 1 ppm of phosphorus which comprises: intimately contacting crude acetyl chloride having been recovered as a by-product in the production of 2,5-dioxo-1-oxa-2-phospholanes from dichlorophosphanes, acrylic acid and acetic anhydride and containing phosphorus compounds with 1 to 20 liters of gaseous chlorine per liter of liquid crude acetyl chloride and subjecting the acetyl chloride so contacted with chlorine to fractional distillation.

4,209,461

PROCESS FOR THE PRODUCTION OF BENZOYL CYANIDE (I)

Herbert Klenk, Hanau; Theodor Lüssling, Constance; Alfred Maierhofer, Allensbach; Heribert Offermanns, Hanau, and Hans Wagner, Constance, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,691

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753656

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.[2] C07C *63/06*

U.S. Cl. 260—545 R 25 Claims

1. In a process for preparing benzoyl cyanide by reacting an alkali metal cyanide with benzoyl chloride in the presence of a copper (I) salt at a temperature of about 50° to 160° C. in the presence of a carboxylic acid nitrile inert under the reaction conditions the improvement comprising employing alkali metal cyanide having a particle size range in which at least half of the alkali metal cyanide has a particle size below 0.4 mm and the remainder has a particle size below 1.0 mm.

4,209,462

METHOD FOR PREPARING ACYL CYANIDES

James M. Photis, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 18, 1978, Ser. No. 970,706

Int. Cl.[2] C07C *63/06*

U.S. Cl. 260—545 R 14 Claims

1. A method for preparing acyl cyanides represented by the structural formula:

wherein R represents an alkyl group having from 1 to about 8 carbon atoms, cycloalkyl having from 3 to 12 carbon atoms, optionally substituted aryl or a 5 or 6-membered heterocyclic radical which can optionally be fused to a benzene ring; which comprises reacting an acyl halide represented by the structural formula:

wherein R has the aforedescribed meaning and X represents a halogen selected from the group consisting of fluorine, chlorine, bromine and iodine with an alkali cyanide in the presence

of a catalyst selected from the group consisting of cuprous oxide, elemental copper and mixtures thereof.

4,209,463

PROMOTING THE FORMATION OF NITRODIARYLAMINES FROM NITROHALOARENES, ACTIVATED ARYL AMINES AND SODIUM CARBONATES

Otto W. Maender, Copley, and Robert L. Wright, Fairlawn, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,196
Int. Cl.[2] C07C *85/04*
U.S. Cl. 260—576 8 Claims

1. A process which comprises forming nitrodiarylamine by reacting the formyl derivative of an aromatic amine, nitrohaloarene containing reactive halogen, proton abstractor, at least half the proton abstractor on an acid equivalent basis being a sodium salt containing the CO_3— anion or mixture thereof and a reaction promoting amount of a compound of potassium, cesium, rubidium or mixture thereof.

4,209,464

NOVEL SYNTHESIS OF 3-AMINO-2-METHYLBENZOTRIFLUORIDE FROM N-(2-X-5-TRIFLUOROMETHYLPHENYL)-S,S-DIMETHYLSULFIMIDE

Martin Steinman, Livingston, and Yee S. Wong, Belleville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 805,492, Jun. 10, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,649
Int. Cl.[2] C07C *85/20, 85/24, 85/26*
U.S. Cl. 260—578 6 Claims

1. A process for preparing a 3-amino-2-methylbenzotrifluoride which comprises the steps:

(a) condensing a 3-amino-4-X-benzotrifluoride with an activated dimethylsulfoxide to produce the corresponding N-(2-X-5-trifluoromethylphenyl)-S,S-dimethylsulfimde,

(b) effecting a chemical rearrangement by heating said dimethylsulfimide to form the corresponding 3-amino-4-X-2-methylthiomethylbenzotrifluoride, and

(c) effecting the desulfurization and elimination of the 4-position substituent by chemical reductive means, said X being a member of the group consisting of, chloro, bromo, iodo and alkylthio, said alkyl moiety containing 1 to 8 carbon atoms.

4,209,465

DECOMPOSITION OF CUMENE HYDROPEROXIDE USING A STABLE CARBONIUM, TROPYLIUM OR OXONIUM SALT AS THE CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jun. 20, 1979, Ser. No. 50,470
Int. Cl.[2] C07C *45/00, 37/08*
U.S. Cl. 568—385 11 Claims

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with a catalytic amount of a salt comprising an organic cation selected from triphenylcarbonium, tropylium and tri(lower)alkyl oxonium and an inorganic anion selected from tetrafluoborate, hexafluorophosphate, hexachlorostibnate and hexafluoroarsenate at a temperature between about 25 and about 110° C.

4,209,466

MANUFACTURE OF FORMALDEHYDE

Dieter Wolf, Gruenstadt; Hans Diem, Ludwigshafen; Otto Grabowsky, Limburgerhof, and Guenther Matthias, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 8, 1974, Ser. No. 486,676
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1973, 2334981
Int. Cl.[2] C07C *45/16*
U.S. Cl. 568—487 10 Claims

1. A process for the manufacture of formaldehyde by oxidative dehydrogenation of methanol in the presence of a silver catalyst and in the presence of steam at elevated temperature, wherein the reaction is carried out using methanol which has been separated from a condensate which has been obtained by evaporating aqueous reaction mixtures derived from the synthesis of urea resins and which condensate has then been treated with caustic alkali in a reactor over a residence time of from 8 to 25 minutes with substantially no backmixing, the initial concentration in the condensate of formaldehyde, calculated as 100%, being up to 5% by weight and the temperature being from 80° to 115° C. and the pressure from 2 to 20 atmospheres, and further wherein the separation of the methanol from said condensate is done by distillation of the methanol in the caustic alkali treated condensate, the distillation residue being essentially free from formaldehyde.

4,209,467

HYDROFORMYLATION PROCESS

Hidetaka Kojima; Shingo Oda; Takushi Yokoyama, and Yasukazu Murakami, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Jan. 2, 1979, Ser. No. 269
Claims priority, application Japan, Jan. 17, 1978, 53-3459; Feb. 13, 1978, 53-14051
Int. Cl.[2] C07C *45/10*
U.S. Cl. 260—340.7 16 Claims

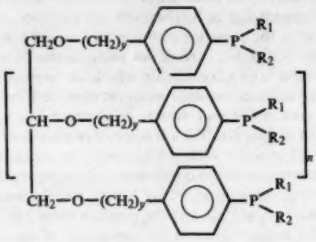
1. In a catalytic hydroformylation process for preparing an aldehyde, wherein an ethylenically unsaturated compound selected from the group consisting of ethylene, propylene, 1-hexene, 2-octene, 1-decene, 2-ethyl-1-octene, cyclohexene, butadiene, styrene, allyl alcohol, allyl acetate, 1,1-diethoxypropene-2, methyl acrylate and 2-vinyl-4-methyl-1,3-dioxane, is reacted with carbon monoxide and hydrogen, under hydroformylation conditions of a combined pressure of carbon monoxide and hydrogen of from 10 to 100 atmospheres, at a temperature of 70° to 150° C., the improvement which comprises: the hydroformylation reaction is carried out in the presence of a catalytically effective amount of a catalyst formed by reacting at from 50° to 120° C., under a carbon monoxide pressure of 5 to 30 atmospheres, in an organic solvent, a cobalt carbonyl compound selected from the group consisting of dicobalt octacarbonyl and hydrocobalt tetracarbonyl, with from 0.25 to 2.0 equivalents, based on the number of cobalt atoms of said cobalt carbonyl compound, of a nitrogen-containing heterocyclic compound which is substituted with an enolic hydroxyl group on the carbon atom adjacent to the ring-forming nitrogen atom, wherein said heterocyclic compound is selected from the group consisting of pyridine, quinoline, isoquinoline, pyrimidine, pyrazine, quinoxaline, pyrrole, tetrahydropyridine, oxazole, dihydroxazine and epsilon caprolactam to form a complex of said cobalt carbonyl compound and said heterocyclic compound which is capable of being precipitated when the hydroformylation reaction mixture is cooled.

4,209,468
TRIARYL-PHOSPHINE COMPOUNDS

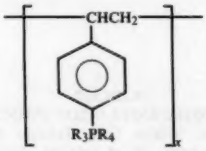
Joel I. Shulman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 781,832, Mar. 28, 1977, Pat. No. 4,098,911.
This application Feb. 21, 1978, Ser. No. 879,655
Int. Cl.[2] C07D *105/02, 107/02*
U.S. Cl. 568—13 4 Claims

1. A polymeric triaryl-phosphine or a polymeric substituted triaryl phosphine of the formula:



wherein R_1 and R_2 are each selected from the group of aryl and substituted aryl, n is an integer from 0 to 4, and y is an integer from 1 to 4; or



wherein x is an integer of from 2 to about 15 and R_3 and R_4 are each selected from the group of aryl and substituted aryl.

4,209,469
PROCESS FOR THE PRODUCTION OF ARYL THIOLS

Hans Thies, Rheinfelden, Fed. Rep. of Germany, and Fred von Kaenel, Seltisberg, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 19, 1978, Ser. No. 971,135
Claims priority, application Switzerland, Dec. 30, 1977, 16300/77
Int. Cl.[2] C07C *148/00*
U.S. Cl. 568—68 13 Claims

1. A process for the production of an aryl hydrocarbon thiol chloride, which comprises hydrogenating an aryl hydrocarbon sulfonyl in a protic or aprotic solvent in the presence of platinum as catalyst, at a temperature between 100° and 180° C., with hydrogen under a pressure of 2 to 140 bar, in a single pot reaction.

4,209,470
PROCESS FOR THE SEPARATION OF HYDROGEN FLUORIDE FROM ITS MIXTURES WITH 1-CHLORO-1,1-DIFLUOROETHANE

Robert Lorquet, Rixensart, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Jan. 10, 1979, Ser. No. 2,449
Claims priority, application France, Jan. 13, 1978, 78 01309
Int. Cl.[2] C07C *7/02*
U.S. Cl. 260—652 P 12 Claims

1. Process for the separation of hydrogen fluoride from its liquid mixtures with 1-chloro-1,1-difluoroethane, comprising: separating the liquid mixture by decantation to obtain a liquid organic phase enriched in 1-chloro-1,1-difluoroethane and a liquid organic phase enriched in hydrogen fluoride by adding to the mixture a liquid containing an auxiliary solvent, selected from the group consisting of 1,1-dichloro-1-fluoroethane, vinylidene chloride, 1,1,1-trichloroethane and mixtures thereof, before subjecting it to decantation.

4,209,471
PROCESS FOR THE PURIFICATION OF O,O-DI(LOWER)ALKYLDITHIOPHOSPHORIC ACIDS

James H. Dube, Mobile, Ala., and Ralph Miller, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

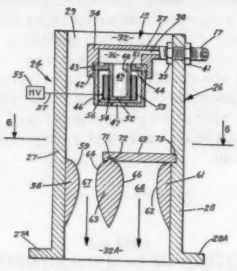
Filed May 10, 1977, Ser. No. 795,460
Int. Cl.[2] C07F *9/165*
U.S. Cl. 260—990 7 Claims

1. A method for recovering high-purity O,O-di(lower)alkyldithiophosphoric acid from a crude thio acid mixture obtained from the reaction of phosphorous pentasulfide and four equivalents of a lower alkanol which comprises contacting said crude thio acid mixture with water or an acidic aqueous solution to form two liquid phases, said acidic aqueous solution containing an inorganic substance which is inert to the thio acid and reduces the solubility of the thio acid in water, separating the two phases, contacting the aqueous phase with a stable water-immiscible volatile organic solvent to form two liquid phases, separating the two phases and vaporizing the organic solvent to recover said high-purity thio acid.

4,209,472
FUEL SUPPLY SYSTEM

Francis W. Child, Eagle Bend, and Richard O. Bartz, Edina, both of Minn., assignors to Child Laboratories Inc., Eagle Bend, Minn.

Filed Oct. 29, 1976, Ser. No. 736,709
Int. Cl.[2] F02M *29/04*
U.S. Cl. 261—23 A 24 Claims



1. An apparatus for supplying an air and fuel particle mixture to a means for using the mixture comprising: a housing having a passage adapted to carry an air and fuel particle mixture to the means for using the mixture, first means for introducing particles of fuel into the passage, said particles of fuel being mixed with air in said passage to form an air and fuel particle mixture, and second means mounted on the housing and located in the passage downstream of the first means forming a first venturi throat and a second venturi throat, said first venturi throat being unobstructed and smaller than the second venturi throat, said first and second venturi throats receiving the air and fuel particle mixture and directing the mixture to the means for using the mixture, and control means for controlling the flow of the air and fuel mixture only through said second venturi throat, said first venturi throat remaining open at all times.

4,209,473

CROSSLINKED CHLORINATED POLYETHYLENE FOAM

Brenton S. Coyne, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 713,010, Aug. 9, 1976, Pat. No. 4,146,598. This application Jan. 4, 1979, Ser. No. 863

Int. Cl.[2] H05B *1/00*; C08J *9/10*

U.S. Cl. 264—22 10 Claims

1. A process for preparing a crosslinked, soft, flexible, closed-cell foam from suspension chlorinated high density polyethylene, said process comprising

(a) preparing a foamable mixture by mixing a high density polyethylene containing from about 20 to 50 percent of chemically combined chlorine by suspension and having a flexural modulus at 25° C. of less than about 15,000 psi as determined by ASTM Test No. 790, Method 1, Procedure A, with a thermally decomposable chemical foaming agent,

(b) melt molding said foamable mixture at a temperature below that of the decomposition temperature of said chemical foaming agent, into a molded foamable article,

(c) subjecting said molded foamable article while maintained at a temperature below the decomposition temperature of said foaming agent to an ionizing radiation, for a period of time sufficient to impart crosslinking sufficient to enable said molded foamable article to retain its shape, and

(d) contacting the crosslinked molded foamable article, with a heat transfer medium maintained at a temperature between about 150° C. and about 350° C. for a period of time sufficient to form the desired flexible product.

4,209,474

PROCESS FOR PREPARING SEMICONDUCTING SILICON CARBIDE SINTERED BODY

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 829,454, Aug. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 681,706, Apr. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 573,777, May 1, 1975, abandoned. This application Feb. 9, 1979, Ser. No. 10,515

The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.

Int. Cl.[2] C04B *35/56, 35/58, 35/64*

U.S. Cl. 264—29.5 2 Claims

1. A method of producing an N-type semiconductor having an electrical resistivity at 20° C. ranging from 10 ohm centimeters to 10^{-2} ohm centimeter and an electrical resistance that shows a positive temperature coefficient at temperatures ranging from about 800° C. to about 2000° C. and which retains N-type semiconducting properties at temperatures ranging from about −100° C. to 2000° C. which comprises providing a substantially homogeneous mixture of a submicron powder consisting essentially of β-silicon carbide, an amount of boron additive selected from the group consisting of boron and boron carbide equivalent to about 0.3 part to 3.0 parts by weight of boron based on 100 parts by weight of said β-silicon carbide, and an amount of a carbonaceous additive selected from the group consisting of free carbon and a carbonaceous organic material equivalent to 0.1 part to 1.0 part by weight of free carbon based on 100 parts by weight of said β-silicon carbide, said carbonaceous organic material completely decomposing at a temperature ranging from about 50° C. to 1000° C. to said free carbon and gaseous product of decomposition, shaping the mixture into a green body, and sintering the green body at a temperature ranging from about 1280° C. to 2300° C. in a sintering atmosphere which ranges from atmospheric pressure to superatmospheric pressure of 5 atmospheres and which contains nitrogen from a partial pressure of 10^{-1} atmosphere to a pressure of 5 atmospheres producing a sintered body having a density of at least 90% of the theoretical density for silicon carbide and having pores which are substantially non-interconnecting.

4,209,475

METHOD AND APPARATUS FOR EFFECTING UNIFORM FILM THICKNESS

F. John Herrington, Holcomb, N.Y., and Alvin J. Stein, Jacksonville, Ill., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,302

Int. Cl.[2] B29F *3/08*

U.S. Cl. 264—40.1 3 Claims

1. A method of producing extruded thermoplastic material having improved uniformity of thickness, said method comprising:

(a) extruding molten thermoplastic resin material in the form of a continuous article;

(b) drawing the extrudate away from the extrusion die while causing a stream of quenching fluid to contact said extruded material to solidify the thermoplastic resin;

(c) detecting areas of non-uniform thickness in the solidified article; and

(d) redirecting a portion of said stream of quenching fluid by projecting a moveable deflector blade therein, which blade intersects said stream and causes a localized turbulence in the vicinity of said intersection thereby causing said redirected portion of said stream to impinge upon said extruded material in the vicinity of said non-uniform thickness at an increased or decreased angle of contact and thereby readjust the quenching rate of the molten extrudate in the vicinity of said increased or decreased angle of contact.

3. In an apparatus for forming a continuous tubular article of plastic material, said apparatus comprising an annular extrusion die thru which molten thermoplastic resin is extruded, a cooling ring having a central opening therethru which ring is mounted in line with and subsequent to said extrusion die such that said molten extrudate passes thru said central opening thereof, and means for providing a stream of fluid cooling material, which fluid cooling material is substantially uniformly distributed around the circumference of said extrudate by said cooling ring and impinges on the surface thereof to solidify the molten or semi-molten resin as it is drawn away from said die, the improvement comprising:

(a) a multiplicity of independently moveable blades mounted peripherally around the circumference of said central opening,

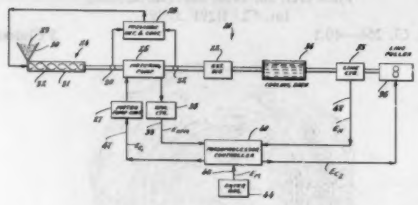
(b) means for individually projecting selected blades into said stream of fluid cooling material after said stream emerges from said cooling ring and before it makes contact with said tubular extrudate such that each of said blades, when so projected, will divert a portion of said fluid stream to create a localized turbulence therein and change the angle of contact between that portion of said cooling fluid stream and said tubular extrudate, and

(c) means for holding said selected blades in the desired position after they have been projected into said stream.

4,209,476
METHOD AND APPARATUS FOR FABRICATION OF EXTRUDED ARTICLES

Holton E. Harris, Westport, Conn., assignor to Harrel, Incorporated, East Norwalk, Conn.

Continuation-in-part of Ser. No. 801,078, May 27, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,152
Int. Cl.[2] B29F *3/06*
U.S. Cl. 264—40.4 20 Claims



1. A method of forming an extrudate having a not readily measurable linear cross-sectional dimension and of maintaining that dimension at a predetermined, average value comprising the steps of:

A. supplying an extrudate stock at a substantially uniform volumetric rate to an extrusion die which provides an extrudate output therefrom of predetermined cross-sectional configuration, said extrudate having a first linear cross-sectional dimension which is subject to variation over an interval of time but which is not readily measurable;

B. monitoring the extrudate stock supply rate;

C. measuring the length of said extrudate output over said interval of time;

D. directly measuring a second linear cross-sectional dimension over said interval of time;

E. indirectly determining from said measured length, from the volumetric rate, from said second linear cross-sectional dimension and from said predetermined cross-sectional configuration, the average value of said extrudate first linear cross-sectional dimension during an interval of time;

F. determining variations between said average value and a predetermined average value of said first linear cross-sectional dimension; and

G. varying the extrudate stock supply rate to said die for restoring said average determined first linear cross-sectional dimension to said predetermined average value.

11. An apparatus for forming an extrudate having a not readily measurable linear cross-sectional dimension and for maintaining that dimension at a predetermined, average value comprising:

A. an extrudate die adapted to provide an extrudate output therefrom upon the application thereof of an extrudate stock material in plasticized or liquid form;

B. metering pump means for supplying an extrudate stock to said extrudate die at a substantially constant volumetric supply rate;

C. means for supplying said extrudate stock material in liquid or plasticized form to said metering pump means;

D. said extrudate die having an orifice for providing an elongated extrudate output body of predetermined cross-sectional configuration, said extrudate having a first linear cross-sectional dimension which is subject to variation over an interval of time, but which is not readily measurable;

E. means for monitoring the extrudate stock supply rate and for generating an electrical signal representative of said supply rate;

F. means for measuring and generating an electrical signal representative of the length of said extrudate over said interval of time;

G. means for directly measuring and generating an electrical signal representative of a second linear cross-sectional dimension over said interval of time;

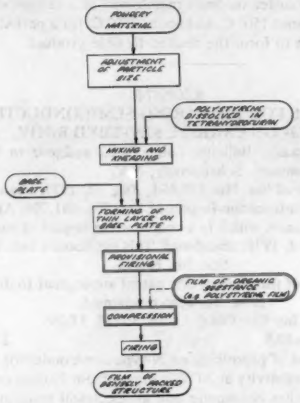
H. means for indirectly determining from said measured length, from said metering pump supply rate from said second linear cross-sectional dimension and from said predetermined cross-sectional configuration an average value of said extrudate first linear cross-sectional dimension, for determining variations between said average value and a predetermined average value of said first linear cross-sectional dimension; and

I. means for varying the extrudate stock supply rate to said die for restoring said average first linear cross-sectional dimension to said predetermined average value.

4,209,477
PROCESS FOR PREPARING A FILM OF DENSELY PACKED STRUCTURE

Hiroaki Yanagida, Kashiwa; Masayuki Nagai, Chiba, and Tadao Shimizu, Tachikawa, all of Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Japan

Continuation-in-part of Ser. No. 699,059, Jun. 23, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,609
Claims priority, application Japan, Aug. 20, 1975, 50-100898
Int. Cl.[2] C04B *35/64*
U.S. Cl. 264—62 19 Claims



1. A process of preparing a densely packed ceramic film from a powdered ceramic which comprises:

mixing the powdered ceramic with an organic binder dissolved in a solvent to form a homogenous mixture;

spreading the homogenous mixture on to a base plate to form a thin layer of said mixture on said base plate;

provisionally firing said thin layer of said mixture at from about 300° to about 900° C. to remove by evaporation and decomposition said organic binder and said solvent from said thin layer;

cooling the provisionally fired thin layer;

covering said provisionally fired thin layer with an organic film to form a sandwich wherein said provisionally fired thin layer is between said organic film and said base plate;

compressing said sandwich of film, thin layer and base plate at a pressure of about 0.5 to about 10,000 Kg/cm^2 to densely pack the thin layer and to adhere said densely packed thin layer to said organic film; and

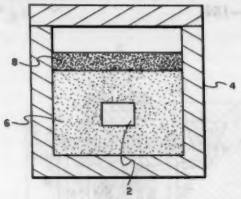
heating said densely packed thin layer adhering to said film at from about 1000° to about 1600° C. to sinter said densely packed thin layer and to remove said organic film by evaporation and decomposition.

4,209,478

METHOD OF SINTERING CERAMICS

John R. Wooten, Thousand Oaks; Harry W. Carpenter, Northridge, and Edwin F. C. Cain, Canoga Park, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 16, 1978, Ser. No. 934,113
Int. Cl.[2] C04B 35/58, 35/60
U.S. Cl. 264—65 16 Claims



1. A method of manufacturing ceramic articles, said method comprising the steps of:

forming a compact comprising a ceramic material and a sintering aid;

surrounding said compact with powder comprising a nonsinterable material, which is compatible with the material of said compact;

disposing above said powder a cover layer; composed of a sinterable material, which is compatible with the material of said compact; and

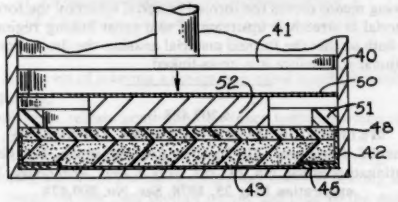
sintering said compact under a pressure of about 0.5–2 atmospheres.

4,209,479

MEANS FOR IMPROVING MANUFACTURE OF SOLID STATE CELLS

Philip B. Gunther, Hastings-on-Hudson, and Robert Nikitopoulos, Carmel, both of N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Nov. 25, 1977, Ser. No. 855,103
Int. Cl.[2] C25B 9/04
U.S. Cl. 264—104 10 Claims



1. A method for the manufacture of solid state cells comprising the steps of placing a radially rigid non-flexible wall retaining member within a compression die cavity, placing a smearable cathode material into said wall retaining member, with said wall retaining member separating said cathode material from the walls of said die, placing and compressing a solid electrolyte onto said cathode material, compressing an anode material onto said electrolyte, and retaining said wall retaining member as a component of said cell wherein said wall retaining member encloses all of the height of said cathode and at most, part of the height of said electrolyte.

4,209,480

IMPLANTABLE MATERIAL AND METHOD OF PREPARING SAME

Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024

Division of Ser. No. 758,499, Jan. 11, 1977, Pat. No. 4,178,532, which is a continuation-in-part of Ser. No. 300,246, Oct. 24, 1972, abandoned. This application Jul. 26, 1978, Ser. No. 928,068
Int. Cl.[2] B29D 3/02
U.S. Cl. 264—108 15 Claims

1. A method of forming a fibrous composition, comprising

mixing in a liquid diluent carbon fibers and particles of a a perfluorinated high polymer resin to form a uniform slurry,

filtering said slurry to form a filter cake having less than about 20 percent diluent,

compressing said filter cake at a pressure of from about 500 to about 3000 psi, at a temperature of from about 100° F. to about 250° F. for a period of from about one to five minutes,

passing said compressed filter cake through the nip of heated rolls a plurality of times to reduce the thickness thereof and to orient substantially all of the fibers therein essentially parallel to the surface of said fibrous composition;

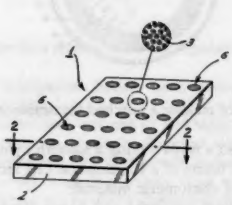
heating the rolled composition to a sintering temperature to bond the resin particles therein to form said fibrous composition.

4,209,481

PROCESS FOR PRODUCING AN ANISOTROPICALLY ELECTROCONDUCTIVE SHEET

Yoshikazu Kashiro; Kenji Matsugasako, and Shunro Kataoka, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 900,183, Apr. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 788,751, Apr. 19, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,009
Claims priority, application Japan, Apr. 19, 1976, 51-43598; Apr. 19, 1976, 51-43599; Sep. 9, 1976, 51-107239; Oct. 27, 1976, 51-128231
Int. Cl.[2] B29C 5/00; B29D 3/02
U.S. Cl. 264—24 10 Claims



1. A process for producing an anisotropically electroconductive sheet which comprises;

(a) mixing magnetic electroconductive wires having a substantially uniform length into a non-electroconductive liquid matrix.

(b) pouring the mixture into a cavity formed between two parallel planes, the distance between the planes being greater than the length of the electroconductive wires;

(c) generating a magnetic field in the direction perpendicular to said parallel planes and orienting the electroconductive wires in the matrix to the magnetic field direction then;

(d) decreasing the distance between said planes to a length not longer than that of the electroconductive wires, and

(e) hardening the liquid matrix.

4,209,482

METHOD OF PRODUCING SHAPED BODIES OF REINFORCED SYNTHETIC RESIN

Walter Schwarz, Engerthstr. 237b, Wien, Austria (A 1020)

Filed Aug. 4, 1978, Ser. No. 931,014

Claims priority, application Austria, Aug. 5, 1977, 5779/77; Feb. 24, 1978, 1370/78

Int. Cl.[2] B29C *11/00;* B29G *7/00*

U.S. Cl. 264—135 12 Claims

1. A method of making a shaped article of reinforced synthetic-resin material, comprising the steps of:

(a) impregnating a body of reinforcing material having given shape and dimensions with a hardenable synthetic resin to form an impregnated body of said shape and dimensions;

(b) completely surrounding the impregnated body with a form-defining liquid material of higher density than the synthetic-resin while the synthetic-resin impregnating said body is in a flowable state, said material being nonmiscible with the synthetic-resin;

(c) solidifying said synthetic-resin in said body while the latter is surrounded by the material of said liquid; and

(d) removing the material of said liquid from the body after the solidification of said synthetic-resin.

4,209,483

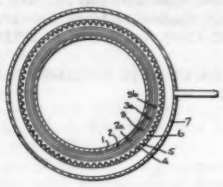
METHOD OF MAKING A NOTCHED TRANSMISSION BELT

Peter H. Batchelar, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 698,980, Jun. 23, 1976, abandoned, which is a continuation of Ser. No. 526,888, Nov. 25, 1974, abandoned. This application Apr. 7, 1978, Ser. No. 894,300

Int. Cl.[2] B29H *7/22*

U.S. Cl. 264—159 4 Claims



1. A method of making a notched transmission belt comprising:

placing around a mold having a smooth cylindrical surface component layers of a transmission belt including at least one layer of elastomeric material;

disposing around the mold and layers thereon an endless elastomeric sleeve having an inner surface with ribs formed thereon extending axially of the mold and a shell surrounding said sleeve;

laterally expanding said endless elastomeric sleeve against said shell while disposing said sleeve around the mold and layers thereon;

urging said sleeve against said layers on said mold under heat and pressure to form a cured belt slab having an outer surface having molded grooves therein;

said sleeve sealing said mold and said layers thereon inside said sleeve from the pressure region exterior to said sleeve;

separating said cured belt slab into a plurality of belts;

and removing said sleeve from said cured belt slab prior to the step of separating said cured belt slab into a plurality of belts.

4,209,484

METHOD OF MANUFACTURING PRODUCTS OF CROSS-LINKED THERMOPLASTIC MATERIAL

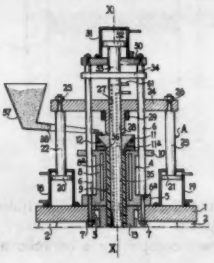
Gerard M. Denis, Laxou; Bernard M. Ginglinger, and Claude M. Rothamel, both of Pont-a-Mousson, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Feb. 15, 1978, Ser. No. 878,105

Claims priority, application France, Feb. 28, 1977, 77 05824; Aug. 1, 1977, 77 23596

Int. Cl.[2] B29F *3/08*

U.S. Cl. 264—184 9 Claims



1. A process for producing long products of cross-linked high-density polyethylene having a molecular weight of at least 200,000, comprising forming a mixture which is essentialy a powdered mixture containing said polyethylene and a cross-linking agent, charging the mixture into a heated substantially cylindrical die head, exerting a pressure on the mixture in the die head in a direction along the axis of the die head so as to sinter the mixture in a sintering region of the die head while maintaining the sintering region of the die head at a temperature lower than the temperature at which the cross-linking agent becomes substantially decomposed but sufficient to cause fusion of the mixture and produce a formed material, and constraining the formed material issuing from the die head to enter a bath of molten salt located downstream of the die head relative to the travel of the formed material by first driving means located adjacent an inlet end of the bath and engaged with the formed material and second driving means located adjacent an outlet end of the bath and engaged with the formed material, the bath of molten salt having a temperature which causes the decomposition of the cross-linking agent and the cross-linking of the formed material in a cross-linking region of the bath, said second driving means driving the formed material at a rate which is higher than the rate at which the first driving means drives the formed material whereby the formed material is stretched upstream of said cross-linking region of the bath so that the formed material assumes the desired cross-sectional size before it is cross-linked.

4,209,485

METHOD OF MAKING A VALVE APPARATUS

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Continuation of Ser. No. 793,284, May 3, 1977, abandoned. This application May 25, 1978, Ser. No. 909,474

Int. Cl.[2] B29F *1/14;* B29D *23/02;* B29C *1/06*

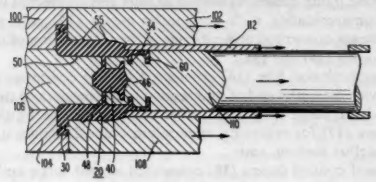
U.S. Cl. 264—242 14 Claims

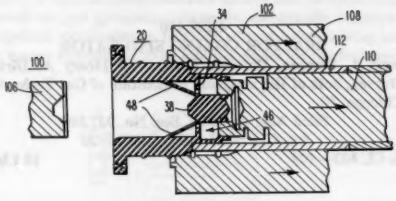
1. A method of making a valve apparatus comprising a valve seating portion including a valve opening, a valve member and a connective means extending from said valve seating portion to said valve member, said method comprising the following steps:

integrally molding an elastomeric material to form said valve seating portion, said valve member and said connective means with said valve member on one side of said valve opening;

passing at least a portion of said valve member through said valve opening to the other side thereof; and

stretching said connective means while passing said portion of said valve member through said opening so as to create





a bias on said valve member which tends to seat said valve member on said other side of said opening.

4,209,486

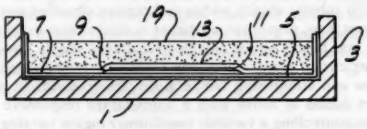
PROCESS OF INLAYING A DESIGN IN MOLDED SIMULATED MARBLE

Wallace D. Ross, 9719 Echo La., Overland, Mo. 63114

Filed Feb. 5, 1979, Ser. No. 9,540

Int. Cl.[2] B29C *5/00, 9/00;* **B29D** *3/02*

U.S. Cl. 264—245 **17 Claims**



1. A process of inlaying a design in molded synthetic marble comprising:

applying a release coating to the inner bottom surface of a mold;

applying a transparent gel coat on said release coating;

placing a piece of porous flexible sheet material bearing said design on one face thereof on the gel coat in the mold, with said one face toward the gel coat;

smoothing said piece of sheet material on said gel coat to contour it to the surface of the gel coat and to remove any air trapped beneath it, with any such air escaping up through the porous sheet material;

casting a hardenable marble mix in the mold over the piece of sheet material; and

allowing the marble mix to harden for removal of the resultant synthetic marble slab from the mold, said piece of sheet material being inlaid in the slab with the design viewable through said transparent gel coat.

4,209,487

METHOD FOR CORROSION INHIBITION

Ronald D. Hogue, Manchester; Thomas M. King, Creve Coeur, and Robert S. Mitchell, Webster Groves, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 583,135, Jun. 2, 1975, abandoned. This application Apr. 15, 1976, Ser. No. 677,467

Int. Cl.[2] C23F *11/10*

U.S. Cl. 422—12 **10 Claims**

1. A method of inhibiting the corrosion of metals in contact with an aqueous corrosive medium which comprises maintaining in said medium at least about 3 parts per million of 1,2-ethane diphosphonic acid or a water soluble salt thereof having the formula

$$M_2O_3P—CH_2CH_2—PO_3M_2$$

wherein each M is individually selected from the group consisting of hydrogen, alkali metal ions, ammonium ions and alkyl ammonium ions.

4,209,488

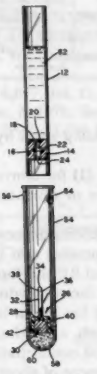
FLUID COLLECTION APPARATUS

Philip J. Breno, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 10, 1978, Ser. No. 949,847

Int. Cl.[2] B01D *33/00;* **B01L** *3/00*

U.S. Cl. 422—101 **15 Claims**



1. A fluid collection apparatus for the separation of a mixture comprising:

an elongate, transparent, hollow body having a first and a second open end;

closure means for said first end of said body;

a self-sealing septum sealingly disposed within said body adjacent the second end, said septum including a centrally disposed cavity extending axially from one end thereof and terminating in a normally closed slitted web portion at the opposite end thereof, and at least a pair of spaced apart inwardly extending ribs in said cavity; and

a composite piston adapted to be inserted into the second end of said hollow body, said composite piston including a unitary body having a central passageway therethrough, hollow piercing means adapted to pierce said slitted web portion of said septum and provide communication between said central passageway and the interior of said hollow body, a filter element disposed within said central passageway, and a laterally extending flange extending beyond the outer wall of said hollow body whereby when said apparatus is inserted into a sample containing tube, said piercing means is caused to pierce said slitted web portion of said septum to allow a filtrate to pass through said filter element through said hollow piercing means and

into the interior of said hollow body, such that when said apparatus is withdrawn from the sample containing tube said flange maintains said composite piston in the sample containing tube, and allows said web to seal when said piercing means is removed therefrom.

4,209,489

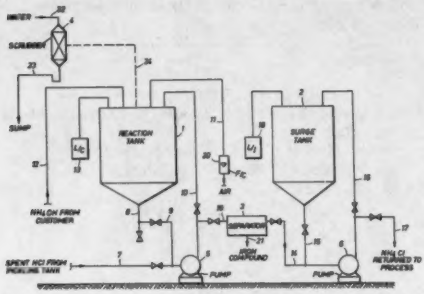
APPARATUS FOR TREATING SPENT HYDROCHLORIC ACID

Frederick O. Jaye, Jr., 819 Crossroads Dr., Houston, Tex. 77079

Division of Ser. No. 852,314, Nov. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 666,147, Mar. 11, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 962,051

Int. Cl.[2] C01B *7/08*; B01J *1/00*

U.S. Cl. 422—106 **3 Claims**



1. Apparatus for treating spent hydrochloric acid comprising:

reaction tank means (1) for converting spent hydrochloric acid into a mixture of ammonium chloride solution and magnetite,

flow means (12) for feeding ammonium hydroxide to the top of said tank to neutralize said spent acid to a pH of between about 8.5 and 9.0 and forming a mixture of ammonium chloride and ferrous hydroxide,

first pump means (5) having an inlet conduit means (7) in communication with a pickling bath containing spent HCL having an iron concentration of about nine percent by weight and a Baume of about 10°–12°, and a recirculation outlet means (10) in communication with the top of said reaction tank for delivering spent HCL thereto,

solids withdrawal means (8) in communication with the bottom of said reaction tank and including means (9) for directing materials in said reaction tank to said inlet conduit means (7),

means (11) for feeding air to said reaction tank to convert the ferrous hydroxide therein to magnetite, said air feeding means (11) including flow control means (20) for regulating the supply of air to said reaction tank to about 4–5 cubic feet per minute,

a scrubber means (4) having a supply line (22) for delivering water thereto, a feed line (24) in communication with the top of said reaction tank for directing ammonia gas liberated in said reaction tank to said scrubber means, and a sump line (23) for the exit of an ammoniated water solution from said scrubber means,

control means (13) connected to said reaction tank for maintaining a predetermined level of liquid in said reaction tank,

separating means (3) having an outlet means (21) for solids removal, an inlet means (19) connected to and communicating with said recirculation outlet means (10), and a solution outlet means (14),

a surge tank (2) having an outlet means (15) connected to and communicating with said outlet means (14),

second pump means (6) having an inlet end connected to and communicating with said outlet means (14), said pump means connected downstream of the intersection of outlet means (14) and (15),

a recirculation line (16) connected to and communicating with the outlet end of said second pump means and the top of said surge tank, and further comprising a recirculation line (17) for returning ammonium chloride solution to a preflux section, and

second control means (18) connected to said surge tank for maintaining a predetermined level of liquid in said surge tank.

4,209,490

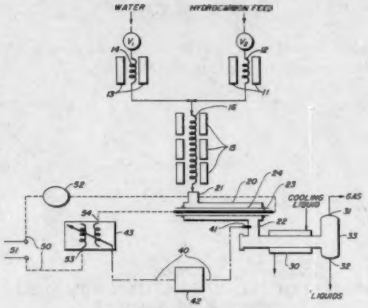
REACTOR COKING SIMULATOR

Dennis A. Duncan, Downers Grove, and Henry A. Dirksen, Harvey, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Aug. 28, 1978, Ser. No. 937,090

Int. Cl.[2] B01J *1/00*; C10G *9/20*

U.S. Cl. 422—109 **10 Claims**



1. A hydrocarbon reactor coking simulator comprising: a reactor means comprising a tubular reactor chamber having a gas inlet means at one end and a gas outlet means at the opposite end providing gas flow through said tubular reactor chamber, an in-stream, electric resistance heater means having an annular tubular sheath within said reactor chamber and in said gaseous flow, power circuit means in electrical communication with said heater means and electric power supply means, said power circuit means supplying variable power to said heater means and comprising temperature sensor means in said gas outlet means in series with a temperature responsive circuit means controlling a variable transformer means varying power to said heater means to maintain substantially constant temperature of said gaseous flow at said gas outlet means, and a measurement means in series with said heater means, for indicating an increase in power supplied to said heater means which is proportional to the deposition of coke on said heater sheath.

4,209,491

CONTROL AND MONITORING SYSTEM FOR OXYGEN GENERATING DEVICE

Edward L. Rich, III, Arnold, Md., assignor to Midori Anzen Company, Ltd., Tokyo, Japan

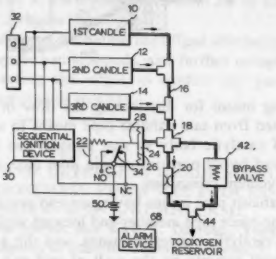
Filed Dec. 21, 1977, Ser. No. 865,017

Int. Cl.[2] B01J *7/00*; A62B *7/08*

U.S. Cl. 422—110 **4 Claims**

1. A control and monitoring system for an oxygen generation device having a plurality of chemical oxygen generation elements for being sequentially ignited and decomposed for continuously generating oxygen, said system comprising: temperature sensor means operatively associated with each of said

chemical oxygen generation elements other than the chemical oxygen generation element to be last ignited for producing a first control signal in response to the heat generated by the corresponding chemical oxygen generation element during the decomposition thereof; gas flow sensor means for sensing the flow of oxygen from said oxygen generation elements and responsive to a flow rate less than a predetermined minimum magnitude of flow of oxygen for producing a second control signal; an ignition mechanism connected to said temperature sensor means and to said gas flow sensor means and operative in response to the presence of both said first control signal from the respective temperature sensor means and said second control signal from said gas flow sensor means, for sequentially igniting said oxygen generation elements one after another; a plurality of light emitting indicator means, one for each of said chemical oxygen generation elements, electrically coupled to said ignition mechanism, a first one of said light emitting indicator means responding to an ignition signal for the first one of



said oxygen generation elements applied thereto from said ignition mechanism for emitting light to indicate the ignition of said first oxygen generation element, each of the remaining light emitting indicator means responding to an ignition signal for the associated oxygen generation element applied thereto from said ignition mechanism for emitting light to indicate the ignition of the associated oxygen generation element, and latching circuit means connected to each of said indicator means other than the indicator means for the first ignited chemical oxygen generation element for holding the corresponding indicator means in the light emitting condition after cessation of said first control signal; and alarm means connected to said gas flow sensor means and operative in response to a continuous second control signal from said gas flow sensor means after a time interval of not less than a predetermined magnitude for indicating the continuous interruption of oxygen generation for said time interval and for as long as said second control signal continues.

4,209,492

ARRANGEMENT FOR THE PRODUCTION OF SPHERICAL PARTICLES FROM DROPS OF AQUEOUS NITRATE SOLUTIONS OF URANIUM, PLUTONIUM OR THORIUM, OR MIXTURES OF THESE MATERIALS FOR FUEL AND BREEDER ELEMENTS FOR NUCLEAR REACTORS

Paul Naefe, Aachen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

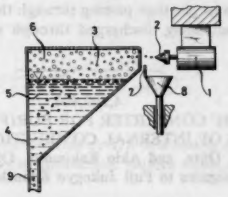
Filed Mar. 28, 1978, Ser. No. 890,990

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714873

Int. Cl.[2] G21C *3/42*

U.S. Cl. 422—159 **7 Claims**

1. In an arrangement for the production of spherical particles from drops of aqueous solutions of nitrates constituted of uranium, plutonium or thorium, as well as mixtures of these materials for the fuel and breeder elements for nuclear reactors; a receptacle for an aqueous and a superimposed gaseous ammonia phase; and a spray nozzle for producing said drops including a vibrator and being in communication with a receptacle for the fuel or breeder material solution, said drops being adapted to traverse the ammonia gas phase under the influence of gravity and a horizontally-directed force, while traversing the aqueous ammonia phase under only the influence of gravity; the improvement comprising: said receptacle for said aque-



ous and gaseous ammonia phase having the top thereof closed; a side opening in the upper portion of said receptacle being located opposite said nozzle, said nozzle being oriented whereby the liquid stream emanating therefrom and dispersed into drops enters horizontally into said ammonia gas phase and therein is deflected into said aqueous ammonia phase under the influence of gravity.

4,209,493

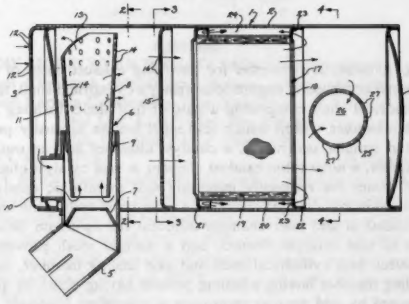
COMBINATION CATALYTIC CONVERTER AND MUFFLER FOR AN EXHAUST SYSTEM

David A. Olson, Stoughton, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Continuation of Ser. No. 814,697, Jul. 11, 1977, abandoned. This application Jan. 3, 1979, Ser. No. 683

Int. Cl.[2] B01J *8/02, 35/04;* F01N *3/15*

U.S. Cl. 422—176 **10 Claims**



1. A combination muffler and catalytic converter for an exhaust system, comprising a housing, inlet conduit means for introducing exhaust gas into said housing, outlet means for discharging gas from said housing, a catalytic conversion unit disposed within the housing between said inlet conduit means and outlet conduit means and being spaced therefrom, the portion of the housing located upstream of the catalytic conversion unit defining a mixing chamber, a venturi including a converging inlet section connected to and communicating with said inlet conduit means, an outlet section disposed within the mixing chamber and spaced from the catalytic unit and a throat section located between the inlet and outlet sections, at least a portion of the length of said outlet section diverging outwardly, air inlet means establishing communication between said throat section and the atmosphere, whereby air is drawn to said throat section by an aspirating action, flow restricting means adjacent the downstream end of said diverging section for restricting the flow of gas therefrom, said outlet

section having a plurality of perforations disposed upstream of said flow restricting means and providing communication between the interior of the outlet section and the mixing chamber, the gases from said outlet section being discharged through said perforations into the mixing chamber, said flow restricting means enhancing the flow of gas through said perforations and into the mixing chamber to obtain improved blending of the air and exhaust gas in said chamber, the mixture of air and exhaust gas then passing through the catalytic conversion unit and being discharged through said outlet conduit means.

4,209,494

CATALYTIC CONVERTER FOR PURIFYING EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

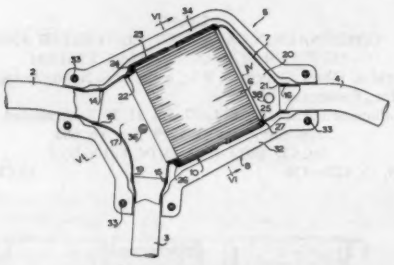
Hiroo Oya, Ohta, and Akio Kakinuma, Ojimamachi, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 913,024

Claims priority, application Japan, Apr. 8, 1978, 53/41516; Apr. 8, 1978, 53/41517; Apr. 8, 1978, 53/41518; Apr. 8, 1978, 53/41519

Int. Cl.[2] **B01J** *35/04, 8/02;* **F01N** *3/15*

U.S. Cl. 422—179 **4 Claims**



1. A catalytic converter for purifying exhaust gases of an internal combustion engine comprising a cylindrical shell, said cylindrical shell comprising a pair of half shells forming an inlet chamber within which said shell has an inwardly projected annular protrusion, a catalyst chamber and an outlet chamber, a monolithic catalyst element in said catalyst chamber, means for resiliently mounting said monolithic catalyst element in said catalyst chamber, a cylindrical sealing member provided in said inlet chamber adjacent the upstream facing end of said catalyst element, and a damper mesh provided between said cylindrical shell and said sealing member, said sealing member having a sealing portion having elasticity and engaged by said annular protrusion at a position upstream of said damper mesh whereby said sealing portion is pressed against said protrusion at the upstream side of said damper mesh to seal the gap between said shell and said catalyst element.

4,209,495

CATALYTIC CONVERTER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toshihiko Kobayashi, and Hirohumi Michioka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1978, Ser. No. 923,300

Claims priority, application Japan, Feb. 24, 1978, 53-22287

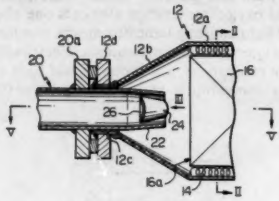
Int. Cl.[2] **B01J** *8/00;* **B05B** *1/14*

U.S. Cl. 422—176 **6 Claims**

1. An exhaust system for an internal combustion engine, adapted for purifying exhaust gas received from the engine, said system including

exhaust pipe means adapted for connecting with said engine for receiving exhaust gas therefrom;

catalytic converter means comprising a casing connected to said exhaust pipe means for receiving exhaust gas therefrom and a catalytic body of a honeycomb structure which is arranged in said casing, said catalytic body having an inlet face transverse to the flow of exhaust gas, said exhaust pipe means having a downstream end facing said inlet face, and the area of said inlet face being larger than the cross-sectional area of the downstream end of said exhaust pipe means; and



guiding means for distributing the flow of exhaust gas directed from said exhaust pipe means to said inlet face of said catalytic body so that exhaust gas is uniformly received by all portions of said inlet face, wherein the improvement comprises:

said exhaust pipe means having an end portion formed from a one-piece pipe member and located within the casing of the catalytic converter means, and the guiding means is formed entirely by the wall of said end portion of said exhaust pipe means.

4,209,496

TREATMENT OF OFFGAS FROM ALUMINUM CHLORIDE PRODUCTION

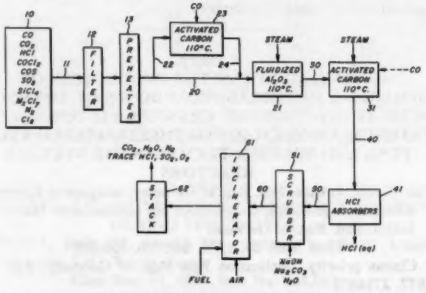
L. Graydon Carpenter, Murrysville, Pa.; Donald L. Kinosz, and Vito Cedro, III, both of Palestine, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 765,346, Feb. 3, 1977, abandoned, and Ser. No. 859,927, Dec. 12, 1977, Pat. No. 4,157,374. This application May 3, 1979, Ser. No. 35,607

The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.

Int. Cl.[2] **C01B** *7/00*

U.S. Cl. 423—210 **14 Claims**



1. A process for treatment of offgas from production of a metal chloride by chlorination of the corresponding metal oxide, said offgas comprising $COCl_2$, $SiCl_4$ and gaseous metal chlorides, said process comprising the steps of

(a) reacting $SiCl_4$ and metal chlorides in the offgas with water vapor for a space time of at least 0.11 minute in a first reaction chamber containing a bed of solid particles

selected from the class consisting of carbon and oxides of metals of the groups IIA, IIIA, IVA, IVB and mixtures thereof, said offgas being maintained at a temperature of about 100° to 200° C. in the bed, thereby forming SiO_2, metal oxides, CO_2 and HCl;

(b) transferring the offgas from the first reaction chamber to a second reaction chamber containing a bed of solid particles selected from the class consisting of carbon and oxides of metals of groups IIA, IIIA, IVA, IVB and mixtures thereof, said offgas being maintained at a temperature of about 100° to 200° C. in the second reaction chamber;

(c) reacting $COCl_2$ in the offgas with water vapor in the second reaction chamber for a space time of at least 0.035 minute, thereby forming CO_2 and HCl and reducing the concentration of $COCl_2$ in the offgas to below 10 ppm; and

(d) removing HCl from the offgas by contacting the offgas with liquid water at a temperature of from 20° to 100° C. to remove HCl vapors therefrom.

4. The process of claim 1 wherein the offgas also comprises partially oxidized carbon compounds, and further comprising the step of incinerating the offgas to oxidize any partially oxidized carbon compounds to CO_2.

4,209,497

PREPARATION OF DETERGENT GRADE SODIUM TRIPOLYPHOSPHATE FROM WET PROCESS PHOSPHORIC ACID AND SODA ASH

Mazin R. Irani, Tarrytown, and Kirk V. Darragh, Yorktown, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 29, 1975, Ser. No. 644,708
Int. Cl.² C01B *15/16, 25/26, 25/16*
U.S. Cl. 423—315 **6 Claims**

1. A process for the preparation of sodium tripolyphosphate from wet process phosphoric acid containing color causing impurities which comprises sequentially performing the steps of:

(a) neutralizing said wet process phosphoric acid within the pH range from about 6 to about 8 with an alkali selected from the group consisting of soda ash, sodium hydroxide, sodium bicarbonate, sodium sesquicarbonate, and mixtures thereof to form a solution of mixtures of mono- and disodium orthophosphates containing organic or inorganic precipitate;

(b) contacting said solution containing organic or inorganic precipitate with an oxidizing agent selected from the group consisting of ozone, hydrogen peroxide, and mixtures thereof in an amount sufficient to oxidize and precipitate color causing impurities;

(c) separating the precipitated color causing impurities of step (b) from said solution of mixtures of orthophosphates; and

(d) drying and heating said solution of mixtures of orthophosphates to effect the change to sodium tripolyphosphate.

4,209,498

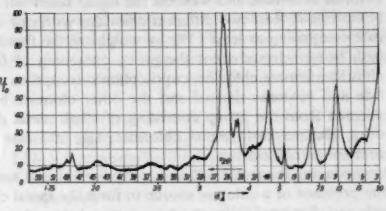
SILICA-CONTAINING MATERIAL FU-1

Thomas V. Whittam, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1977, Ser. No. 845,391
Claims priority, application United Kingdom, Nov. 5, 1976, 46130/76; Jul. 6, 1977, 28267/77
Int. Cl.² C01B *33/28*
U.S. Cl. 423—328 **5 Claims**

1. A silica-containing material FU-1 related to zeolites and having the chemical composition expressed by the formula

$0.6 \text{ to } 1.4R_2O.Al_2O_3.\text{over } 5SiO_2.0 \text{ to } 40H_2O$



(where R is a monovalent cation or 1/n of a cation of valency n) and having an X-ray diffraction pattern substantially as shown in Table 1.

4,209,499

CRYSTALLINE ZEOLITE ZSM-43 SYNTHESIS THEREOF

Mae K. Rubin, Bala Cynwyd, Pa.; Edward J. Rosinski, Pedricktown, and Charles J. Plank, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1977, Ser. No. 844,168
Int. Cl.² C01B *33/28*
U.S. Cl. 423—328 **20 Claims**

1. A synthetic crystalline aluminosilicate zeolite having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$$(0.6 \text{ to } 2.1)M_{2/n}O:Al_2O_3:xSiO_2$$

wherein M is at least one cation having a valence n and x is at least 5, said zeolite having the X-ray diffraction lines substantially as shown in Table I of the specification.

4,209,500

LOW MOLECULAR WEIGHT MESOPHASE PITCH

Stephen Chwastiak, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,963
Int. Cl.² D01F *9/14*; C10C *3/00*
U.S. Cl. 423—447.6 **8 Claims**

1. A single phase essentially completely anisotropic pitch consisting of essentially 100 percent mesophase and suitable for spinning into continuous filaments, said pitch having a number average molecular weight below 1000, a net pyridine insoluble content no greater than 60 percent by weight, a softening temperature no greater than 350° C., and a viscosity no greater than 200 poises at 380° C.

2. A single phase essentially completely anisotropic pitch as in claim 1 having a number average molecular weight of from about 800 to about 900, a net pyridine insoluble content of from 50 percent by weight to 60 percent by weight, a softening temperature of from 330° C. to 350° C., and a viscosity of from about 50 poises to about 150 poises at 380° C.

4,209,501

CHLORIDES OF LEAD, ZINZ, COPPER, SILVER AND GOLD

Paul R. Kruesi, Golden, Colo., assignor to Cato Research Corporation, Wheatridge, Colo.

Continuation-in-part of Ser. No. 906,026, May 15, 1978, abandoned, which is a division of Ser. No. 813,884, Jul. 8, 1977.
This application Jan. 4, 1979, Ser. No. 872
Int. Cl.² C01G *21/16, 9/04, 3/04, 5/00, 7/00*
U.S. Cl. 423—491 **23 Claims**

1. A process for making the chloride of a metal selected from

the group consisting of lead, zinc, copper, silver and gold from the sulfide of said metal in the absence of air which comprises:

(a) forming a liquid fused salt bath in which the formed metal chloride is soluble and wherein the liquid fused salt bath comprises at least two different chlorides with one chloride comprising at least 15% by weight of the fused salt bath being selected from the group consisting of ferric chloride, ferrous chloride, cupric chloride, cuprous chloride and mixtures thereof and the other chloride being selected from the group consisting of alkali metal chlorides, alkaline earth metal chlorides, zinc chloride and ammonium chloride;

(b) introducing the metal sulfide into the liquid fused bath in the presence of a chlorine source to form the metal chloride and elemental sulfur at a temperature below the melting point of the formed chloride; and

(c) recovering the formed metal chloride from the fused bath mixture.

4,209,502

HETEROGENEOUS PROCESS

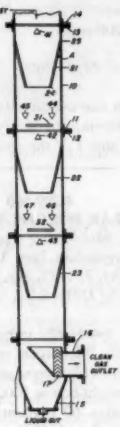
Ladislav J. Pircon, 305 Canterbury La., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 467,083, May 6, 1974, Pat. No. 3,957,465. This application Apr. 16, 1976, Ser. No. 677,750

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.[2] B01J *1/14, 1/22*

U.S. Cl. 423—659 **6 Claims**



1. A process having pressure drops of less than that characteristic of a process using a venturi device, which may be operated with or without liquid for inducing heterogeneous chemical reactions in gas streams comprising:

passing a gas stream and solid or liquid reactant into the upper portion of a vertical casing;

passing the gas stream and solid or liquid at entry velocities under 2100 feet per minute through a continually converging nozzle symetrical with respect to its axis within the casing and having an entry in communication with the gas inlet, the entry of the nozzle having an effective cross-sectional area of about 2 to about 64 times the effective cross-sectional area of the oulet and the mean angle of convergence of the nozzle being about 6° to 20°, differential velocities and differential accelerations and decelerations of non-compressible liquids or solids and compressible gas substantially only along the axis of the nozzle, causing at least two states of gas, solids and liquid to contact causing chemical reaction of reactants in passing through the nozzle;

removing the liquid and particulate matter from the lower portion of the casing; and

separately removing the gas from the lower portion of the casing.

4,209,503

FOOD COMPOSITION CONTAINING WHEY COLLOIDAL PRECIPITATE

Syed M. M. Shah, and Anthony J. Luksas, both of Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Division of Ser. No. 598,873, Jul. 24, 1975, Pat. No. 4,143,174. This application Dec. 1, 1978, Ser. No. 965,270

Int. Cl.[2] A61K *7/16, 7/025, 7/035*

U.S. Cl. 424—49 **24 Claims**

1. A food-grade lipstick, face cream, face base, toothpaste, mouth wash or other pharmaceutical carrier or cosmetic composition comprising a food-grade material and from 0.01% to 25% of a modifier consisting essentially of a non-proteinaceous colloidal precipitate of whey, and wherein said whey colloidal precipitate is the product of a process having at least one step of (a) raising the pH of whey to at least 5.0 ,and (b) heating the whey to a temperature of at least 80° C. for a time sufficient to produce said precipitate, and the precipitate of that said process being identifiable as a complex precipitate which in aqueous suspension has an average particle size of less than 10 microns, is essentially white in color, exhibits no disagreeable taste in aqueous suspensions of up to about 30%, can be dried to a free-flowing powder, is capable of gelling water and petroleum ether, said whey being priorly sufficiently de-proteinated so that 5% by weight of trichloroacetic acid therein will not yield more than 5% by weight of precipitated protein.

4,209,504

TOOTHPASTE WITH ZEOLITE POLISHING AGENT

Helmut Harth, Mainz, and Dieter Becker, Darmstadt Wixhausen, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,224

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757290

Int. Cl.[2] A61K *7/16, 7/18, 7/22, 7/28*

U.S. Cl. 424—49 **5 Claims**

1. In an aqueous toothpaste composition having about 15–60% by weight polishing agent, the improvement comprises said polishing agent containing at least 50% by weight of a synthetic alkali aluminum silicate zeolite of the formula $x(M.AlO_2).ySiO_2.zH_2O$, wherein M is alkali metal or ammonium, x is a number between 1 and 64, y is a number dependent on X with the determination of y being one-fold to six-fold of x, and z is a number between 0 and 256.

4,209,505

PILOCARPINE MOUTHWASH FOR DRY MOUTH RELIEF

Adib R. Mikhail, 34 Leisure La., Woodlands, Tex. 77380

Filed Apr. 3, 1979, Ser. No. 26,581

Int. Cl.[2] A61K *7/22, 31/415*

U.S. Cl. 424—54 **5 Claims**

1. A method of treating a patient suffering from dry mouth, comprising the step of:

contacting the mucosal lining of the mouth of said patient, without ingestion, with a liquid carrier containing at least about 0.025 percent by weight of pilocarpine, pilocarpine nitrate or pilocarpine hydrochloride.

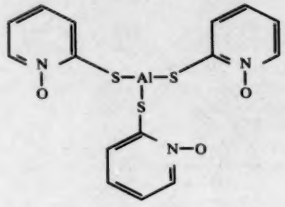
4,209,506

ALUMINUM TRIS-(N-OXYPYRIDINE-2-THIOLATE); COSMETIC OR PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME AND THE USE OF SAID COMPOSITIONS

Claude Bouillon, Eaubonne, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 26, 1978, Ser. No. 928,312
Claims priority, application France, Jul. 28, 1977, 77 23261
Int. Cl.[2] C07D *213/89*; A61K *31/44, 7/38*
U.S. Cl. 424—68 15 Claims

1. Aluminum tris-(N-oxypyridine-2-thiolate) of the following formula:



2. A cosmetic composition having deodorant, disinfectant and antiseptic activity comprising in a suitable vehicle an effective amount of aluminum tris-(N-oxypyrridine-2 thiolate).

4. A method for the treatment of pityriasis, onyxis, intertrigos, dermatomycosis, dermatophytosis, impetigo, dermatosis with a secondary infection, athletes foot, pruritus of infectious origin, hyperhidrosis, or parasitosis, which comprises administering in a suitable vehicle an effective amount of aluminum tris-(N-oxypyridine-2 thiolate).

4,209,507

NOVEL ANTI-TUMOR SUBSTANCE AND PREPARATION THEREOF

Shigeo Ogino, Nishinomiya; Noboru Yoshida, Saitama, and Takao Kiyohara, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 5, 1978, Ser. No. 922,196
Claims priority, application Japan, Jul. 11, 1977, 52-83129
Int. Cl.[2] A61K *35/74*; C12P *1/04*
U.S. Cl. 424—116 8 Claims

1. A substance showing antitumor activity against the ascites form of Sarcoma 18 and Ehrlich carcinoma of mouse which is prepared by culturing the microorganism; *Acinetobacter calcoaceticus var. microformis* SC-1714 (ATCC-31299; FERM-P-4064) in a suitable medium and isolating the substance having the following properties:

Physical and chemical properties

1. Appearance and solubility: obtained as white powders or films, soluble in water but insoluble in organic solvents.
2. Decomposition point: higher than 235° C.
3. Ultra-Violet absorption spectrum: as shown in FIG. 1 (for the product of Example 5), with strong absorption at around 260 nm
4. Infrared absorption spectrum (KBr tablet): as shown in FIG. 2 (for the product of Example 5), with specific absorptions at 3600, 1650, 1550 and 1100–1000 cm^{-1}
5. Elemental analysis: C 33.7–38.9%; H 5.2–6.9%; N 2.3–3.0%
6. Color reactions: slightly positive to ninhydrin reaction , xanthoprotein reaction and biuret reaction; positive to Molisch reaction, anthrone-sulfuric acid reaction, phenol-sulfuric acid reaction and carbazole sulfuric acid reaction.
7. Color reaction of hydrolyzed products: ninhydrin reaction intensified (after hydrolysis in 1 N HCl, at 105° C. for 24 hours); negative to phloroglucin reaction (after hydrolysis in 1 N H_2SO_4 at 100° C. for 4 hours)
8. Stability: Stable at pH 5 to 8 at 0° to 60° C.

Biological properties

1. Biological activity: having no antimicrobial activity, having antitumor activity against ascites form of Sarcoma 180 and Ehrlich carcimona of mouse, immunostimulating activity, anti-vaccinia virus activity, anti-inflammatory activity and activity for inhibiting secretion of acid in the stomach.
2. Acute toxicity: acute toxicity for mouse (ICR type, male, 20 to 25 g) by one dosage is as follows:
   LD_0 1 g or more/kg (oral administration)
   LD_{100} 300 mg/kg (intraperitoneal and and intravenous injection).

4,209,508

ANTIMICROBIAL SUBSTANCE C-3603 AND PROCESS FOR PREPARING THE SAME

Isamu Mitsui, Yokohama; Takefumi Iwanami, Kawasaki; Kazuo Joko, Tokyo; Tsutomu Watanabe, Kamakura; Motozumi Yamadaki, and Yukinori Mori, both of Tokyo, all of Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 900,868
Claims priority, application Japan, Jul. 28, 1977, 52-89790
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—117 2 Claims

1. An antimicrobial substance C-3603 having the following physical and chemical properties:
   (1) Molecular weight
   6.000–10.000 (determined by SDS-polyacrylamide gel disc electrophoresis);
   (2) Decomposition point
   190°–195° C.;
   (3) Ultraviolet absorption spectrum
   in aqueous solution as shown in FIG. 1 having absorption maxima at 280 nm ($E_{1\ cm}^{1\%}$: 40) and 289 nm ($E_{1\ cm}^{1\%}$: 33);
   (4) Infrared absorption spectrum
   shown in FIG. 2 as measured by KBr pellet method and having absorption bands at the following wave numbers expressed in reciprocal centimeters: 3290, 1650, 1535, 1240, 1105, 733;
   (5) Solubility to solvent
   slightly soluble in aqueous solution of acid (pH 3.0), and practically insoluble in water; insoluble in methanol, ethanol, acetone, ether, acetic acid ethyl ester, chloroform, n-hexane and benzene;
   (6) Color reaction
   reacts positively in the following color reactions: ninhydrin, biuret, xanthoprotein and Adamkiewicz;
   (7) Isoelectric point
   pI = 10.0±0.2 (determined by polyacrylamide gel disc isoelectric separation);
   (8) Color and form of substance
   White powder;
   (9) Analysis of amino acids
   by p-toluenesulfonic acid hydrolysis, the following amino acids are found: aspartic acid, threonine, serine, glutamic acid, glycine, alanine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, tryptophan, lysine, ammonia and arginine, but the following are not found: proline, cysteine and histidine.
   (10) Elemental analysis
   (i) C: 50.01%, H: 6.19%, N: 12.84%, S: 0.96%, O (balance): 30.00%
   (ii) C: 49.80%, H: 6.30%, N: 11.41%, S: 1.18%; O (balance): 31.31%; and
   (11) Analysis of fatty acids
   hydrolysate by acid (6 N HCl, 120° C., 20 hr.) extracted by chloroform-methanol, but the fatty acids (C_{10}–C_{18}) not detected by gas-liquid-chromatography.

4,209,509

SUBSTANCE SF-1739 DERIVATIVES, PROCESS FOR PREPARING THE SAME AND ANTIBACTERIAL COMPOSITIONS CONTAINING THE SAME

Shigeharu Inouye; Takashi Shomura, both of Yokohama; Michio Kojima, Tokyo, and Takashi Hisamatsu, Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,406

Claims priority, application Japan, Feb. 8, 1978, 53-13122; Aug. 16, 1978, 53-99144; Sep. 4, 1978, 53-107492

Int. Cl.[2] **A61K** *35/00*

U.S. Cl. 424—119 **11 Claims**

1. A substance SF-1739 HP having the following physicochemical properties:

(1) blackish purple substance;

(2) ultraviolet absorption spectrum as shown in FIG. **1**;

(3) infrared absorption spectrum as shown in FIG. **2** with characteristic absorption bands at 3350, 1655, 1600, 1540, 1355, 1265, 1235, 1180, 1120, 1080, 1020, 1000, 965, 945, 920, 910, 865, 830, 790 and 750 cm^{-1};

(4) nuclear magnetic resonance spectrum as shown in FIG. **3**;

(5) optical rotatory dispersion curve as shown in FIG. **4**;

(6) elementary analysis

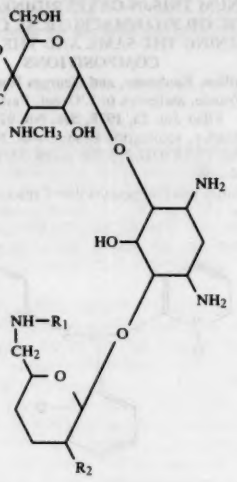
found: C, 62.19%; H, 6.95%; N, 8.50%: O, 22.36% (by difference);

(7) solubility

easily soluble in water and methanol, soluble in ethyl acetate and sparingly soluble in hexane;

(8) chromatography

by a thin layer chromatography on silica gel, Rf values=0.45 (chloroform:methanol=9:1) or 0.23 (n-butanol:methanol:0.1 N hydrochloric acid=4:2:1).



wherein R_1 represents hydrogen or a methyl and R_2 represents amino or a hydroxyl, or thier pharmacologically acceptable acid addition salts.

5. A pharmaceutical composition containing as the active ingredient thereof, a compound according to claim **1** and an inert non-toxic carrier therefor.

4,209,510

AMMONIA-CYANOBORANE, SODIUM IODIDE COMPLEX

Bernard F. Spielvogel; Andrew T. Mc Phail, both of Durham; Iris H. Hall, Chapel Hill, all of N.C.; Patty Wisian-Neilson, Fort Worth, Tex., and Karl D. Hargrave, Durham, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1978, Ser. No. 960,700

Int. Cl.[2] **C01B** *35/06;* **A61K** *33/18, 33/22*

U.S. Cl. 424—148 **5 Claims**

1. $[Na\{NH_3.BH_2(CN)\}_6]I$

2. The method of treating an animal which has arthritis, inflammation, or pain by administering to said animal an effective amount of $[Na\{NH_3.BH_2(CN)\}_6]I$.

4,209,511

AMINOGLYCOSIDE ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Yoshihiko Oka, Kawagoe; Hitoshi Ishida, Ageo; Moto Morioka, Niizo; Yoso Numasaki, Ageo; Tsutomu Yamafuji, Tokyo; Takashi Osono, Tokyo, and Hamao Umezawa, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd. and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, both of Tokyo, Japan

Filed Jan. 3, 1979, Ser. No. 793

Claims priority, application Japan, Jan. 13, 1978, 53-3188

Int. Cl.[2] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **5 Claims**

1. Aminoglycoside anitbiotics represented by the formula

4,209,512

MONO- AND DI-THIOPHOSPHATE ESTERS CONTAINING AN ISOXAZOLINONE RING AND COMPOSITIONS AND METHODS CONTAINING THE SAME

Kazuo Tomita; Tadashi Murakami, both of Hiromachi; Hideakira Tsuji, Yasu; Keigo Matsumoto, Yasu; Katsuhiro Fujita, Yasu, and Shinji Yokoi, Yasu, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

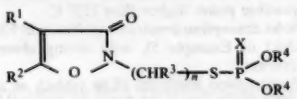
Filed Jun. 1, 1978, Ser. No. 911,426

Claims priority, application Japan, Jun. 9, 1977, 52-68325

Int. Cl.[2] **A01N** *9/36;* **C07D** *261/12;* **C07F** *9/65*

U.S. Cl. 424—200 **19 Claims**

1. Compounds of formula (I):



(I)

wherein:

R^1 represents a hydrogen atom, a lower alkyl group or a halogen atom;

R^2 represents a hydrogen atom, a lower alkyl group or a phenyl group;

R^3 represents a hydrogen atom, a lower alkyl group or a phenyl group;

R^4 represents a lower alkyl group;

X represents an oxygen atom or a sulphur atom; and

n represents 1 or 2.

4,209,513
TABLET FORMULATION

Allan J. Torode, Basildon; David Harden, Sidcup, and John Spence, Bickley, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 743,690, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 549,541, Feb. 13, 1975, abandoned. This application Apr. 14, 1978, Ser. No. 896,297

Claims priority, application United Kingdom, Feb. 14, 1974, 6758/74

Int. Cl.[2] **A61K** *47/00*

U.S. Cl. 424—228 **9 Claims**

1. In a tablet comprising a combination of trimethoprim and sulphamethoxazole, the combination having a particle size of from 1 to 40 μm, together with a granulating agent and a disintegrating agent, the improvement wherein the tablet comprises from 90 to 98 percent (w/w) of the combination of trimethoprim with sulphamethoxazole, from 1 to 5 percent of the granulating agent and from 1 to 5 percent of the disintegrating agent, said disintegrating agent having a swelling capacity of from 5 to about 25 ml/g and the tablet having a hardness of about 9.8 to 20 kg and a disintegration time of less than 9 minutes.

4,209,514
3-AMINOALKYL-4-ARYL-TETRAHYDROAZEPINES

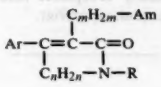
Norbert Gruenfeld, White Plains, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 809,840, Jun. 24, 1977, Pat. No. 4,150,129. This application Nov. 24, 1978, Ser. No. 963,538

Int. Cl.[2] **A61K** *31/55;* **C07D** *403/06*

U.S. Cl. 424—244 **8 Claims**

1. A 3-aminoalkyl-4-aryl-1,5,6,7-tetrahydro-2H-azepinone of the formula



wherein Ar is unsubstituted phenyl, thienyl or pyridyl, or phenyl substituted by up to 3 members selected from lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylthio, lower alkylenedioxy, halogeno or trifluoromethyl; m is an integer from 1 to 7; $C_n H_{2n}$ is lower alkylene separating the olefinic carbon from the nitrogen atom by 3 carbon atoms; R is hydrogen, lower alkyl or lower hydroxyalkyl and Am is mono- or bi-cyclic, 5 to 7 ring-membered lower alkyleneimino, or lower mono- (oxa, thia or aza)alkyleneinimo, a lower alkanoyl derivative of said compounds wherein R is hydrogen, or a therapeutically useful acid addition salt thereof.

7. A diuretic or antihypertensive pharmaceutical composition comprising a diuretically or antihypertensively effective amount of a compound as claimed in claim **1**, together with a pharmaceutical excipient.

4,209,515
TRIAZOLE DERIVATIVES

Roland Heckendorn, Arlesheim, and René Meier, Buus, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

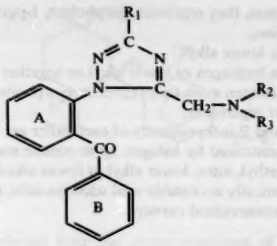
Continuation of Ser. No. 584,801, Jun. 9, 1975, abandoned. This application Sep. 13, 1978, Ser. No. 942,081

Claims priority, application Switzerland, Jun. 14, 1974, 8175/74

Int. Cl.[2] **A61K** *31/41, 31/535;* **C07D** *249/08, 413/06*

U.S. Cl. 424—248.53 **9 Claims**

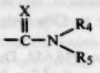
1. A triazole derivative of the formula I



(I)

wherein

R_1 represents hydrogen, lower alkyl, hydroxymethyl, lower alkanoyloxy methyl, lower alkoxy methyl, formyl, carboxy, lower alkoxy carbonyl, cyano or a group of the partial formula I aa



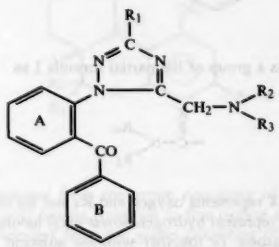
in which X represents two hydrogen atoms and R_4 and R_5 each independently represent hydrogen, lower alkyl having at most 3 carbon atoms, or together with the adjacent nitrogen atom, they represent morpholino, 1-pyrrolidinyl, or piperidino,

R_2 represent lower alkyl,

R_3 represents hydrogen or lower alkyl or together with the adjacent nitrogen atom they represent morpholino, 1-pyrrolidinyl or piperidino,

the rings A and B independently of each other are unsubstituted or substituted by halogen up to atomic number 35, trifluoromethyl, nitro, lower alkyl or lower alkoxy and its pharmaceutically acceptable acid addition salts.

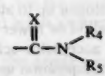
7. A pharmaceutical composition useful in the treatment of epilepsy and of conditions of tension and of agitation in a warm-blooded animal comprising a therapeutically effective amount of a compound having the formula I



(I)

wherein

R_1 represents hydrogen, lower alkyl, hydroxymethyl, lower alkanoyloxy methyl, lower alkoxy methyl, formyl, carboxy, lower alkoxy carbonyl, cyano or a group of the partial formula I aa



in which X represents two hydrogen atoms and R_4 and R_5 each independently represent hydrogen, lower alkyl having at most 3 carbon atoms, or together with the adjacent

nitrogen atom, they represent morpholino, 1-pyrrolidinyl, or piperidino,

R_2 represents lower alkyl,

R_3 represents hydrogen or lower alkyl or together with the adjacent nitrogen atom they represent morpholino, 1-pyrrolidinyl or piperidino,

the rings A and B independently of each other are unsubstituted or substituted by halogen up to atomic number 35, trifluoromethyl, nitro, lower alkyl or lower alkoxy and its pharmaceutically acceptable acid addition salts, together, with a pharmaceutical carrier.

4,209,516

TRIAZOLE DERIVATIVES

Roland Heckendorn, Arlesheim, and René Meier, Buus, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

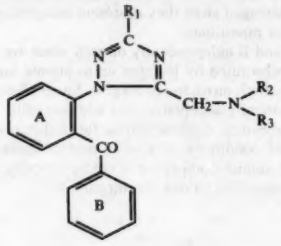
Continuation of Ser. No. 746,654, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 584,801, Jun. 9, 1975, abandoned. This application Aug. 31, 1978, Ser. No. 938,623

Claims priority, application Switzerland, Jun. 14, 1974, 8175/74

Int. Cl.[2] **A61K** *31/41*; **C07D** *249/10, 401/06, 413/06*

U.S. Cl. 424—248.54 **20 Claims**

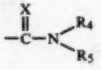
1. A triazole derivative of the formula I



(I)

wherein

R_1 represents a group of the partial formula I aa



in which X represents oxygen and R_4 and R_5 each independently represent hydrogen, lower alkyl having at most 3 carbon atoms, or together with the adjacent nitrogen atom, they represent morpholino, 1-pyrrolidinyl, or piperidino,

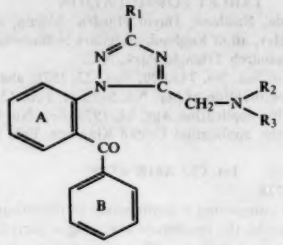
R_2 represents lower alkyl,

R_3 represents hydrogen or lower alkyl or together with the adjacent nitrogen atom they represent morpholino, 1-pyrrolidinyl or piperidino

the rings A and B independently of each other are unsubstituted or substituted by halogen up to atomic number 35, trifluoromethyl, nitro, lower alkyl or lower alkoxy

and its pharmaceutically acceptable acid addition salts.

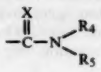
13. A pharmaceutical composition useful in the treatment of epilepsy and of conditions of tension and of agitation in a warm-blooded animal comprising a therapeutically effective amount of a compound according to claim 1 which corresponds to the formula I



(I)

wherein

R_1 represents a group of the partial formula I as



in which X represents oxygen and R_4 and R_5 each independently represent hydrogen, lower alkyl having at most 3 carbon atoms, or together with the adjacent nitrogen atom, they represent morpholino, 1-pyrrolidinyl, or piperidino,

R_2 represents lower alkyl,

R_3 represents hydrogen or lower alkyl or together with the adjacent nitrogen atom they represent morpholino, 1-pyrrolidinyl or piperidino

the rings A and B independently of each other are unsubstituted or substituted by halogen up to atomic number 35, trifluoromethyl, nitro, lower alkyl or lower alkoxy

and its pharmaceutically acceptable acid addition salts, together with a pharmaceutical carrier.

4,209,517

α-ETHYLENIC ALCOHOLS AND KETONES, THEIR PREPARATION, AND THEIR USE AS MEDICAMENTS

André M. Riveron, Seine-Saint-Denis; Jacques N. Astoin, Paris; Alain D. Marivain, Colombes; Micheline Crucifix born Dexheimer, Creteil; Martine M. Lapotre, Maisons-Alfort, and Yvette M. Torrens born Le Gargean, La Frette-sur-Seine, all of France, assignors to Unicler, Paris, France

Filed Jul. 17, 1978, Ser. No. 925,211

Int. Cl.[2] **C07D** *407/02*

U.S. Cl. 424—248.57 **5 Claims**

1. The compound 1-(3,4-methylenedioxyphenyl)-4-morpholino-1-butene-3-ol or a pharmaceutically acceptable salt thereof.

4,209,518

BICYCLOMYCIN AS AN ANIMAL GROWTH PROMOTANT

Kazumasa Mine, Kobe, and Takeo Oshima, Habikino, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 14, 1978, Ser. No. 942,154

Claims priority, application Japan, Sep. 14, 1977, 52-110832

Int. Cl.[2] **A61K** *31/495*

U.S. Cl. 424—250 **7 Claims**

1. A method for promoting the growth of growing animals, which comprises orally administering a feed composition to said animals comprising a sufficient amount of bicyclomycin to promote growth and a compatible animal nutrition source.

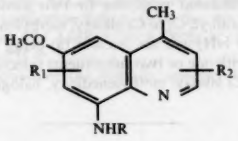
4,209,519

ANTI-LEISHMANIAL LEPIDINE DERIVATIVES

Kenneth E. Kinnamon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1978, Ser. No. 886,024
Int. Cl.[2] A61K *31/47*
U.S. Cl. 424—258 19 Claims

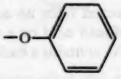
1. A method for treating leishmaniasis which comprises the step of administering parenterally or orally to an infected animal a leishmanicidally effective amount of a lepidine derivative having the formula:



R represents $-(CH_2)_n-N(R')(R'')$, $-(CH_2)_n-NH_2$,

R represents $-(CH_2)_n-N(R')(R'')$, $-(CH_2)_n-NH_2$, $-CH(CH_3)-(CH_2)_b-NH_2$;

R_1 represents H, $-OCH_3$, $-CH_3$, $-CF_3$, $-C_2H_5$, $-CH=CH_2$, $-CH=CH-CH_3$, $-C_3H_7$, $-C_4H_9$,



Cl, or F;

R_2 represents H—CH_3, $-C_2H_5$, $-CF_3$, ;

n represents integers 3,4,5,6, or 7; R′ and R″ represents alkyl or hydrogen; and pharmaceutically acceptable salts~thereof wherein the salt forming acid or acid-hydrate is selected from the group consisting of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid, pamoic acid, and hydrobromic acid.

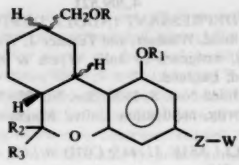
4,209,520

HEXAHYDRO-1-HYDROXY-9-HYDROXYMETHYL-3-SUBSTITUTED-6H-DIBENZO[b,d]PYRANS AS ANALGESIC AGENTS

Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 934,319, Aug. 16, 1978, abandoned, which is a division of Ser. No. 807,439, Jun. 17, 1977, Pat. No. 4,133,819. This application Oct. 18, 1978, Ser. No. 952,314
Int. Cl.[2] A61K *31/44, 31/35;* C07D *405/12, 311/80*
U.S. Cl. 424—263 14 Claims

1. A compound having the formula



wherein

R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

R_1 is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

each of R_2 and R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of

(a) alkylene having from one to ten carbon atoms;

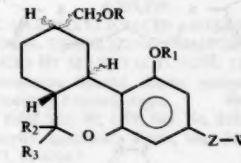
(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to ten carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than ten; each of m and n is 0 or 1; and

W is selected from the group consisting of hydrogen and pyridyl;

with the proviso that when W is hydrogen, Z is $-(alk_1)_m-O-(alk_2)_n-$;

and the pharmaceutically-acceptable acid addition salts of those compounds wherein W is pyridyl.

13. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesia producing quantity of a compound selected from the group consisting of those having the formula



wherein

R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

R_1 is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

each of R_2 and R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of

(a) alkylene having from one to ten carbon atoms;

(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to ten carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than ten; each of m and n is 0 or 1; and

W is selected from the group consisting of hydrogen and pyridyl and; with the proviso that when W is hydrogen, Z is $-(alk_1)_m-O-(alk_2)_n-$;

and the pharmaceutically acceptable acid addition salts of those compounds wherein W is pyridyl.

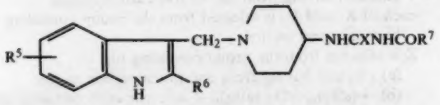
4,209,521
ANTI-DEPRESSANT INDOLE DERIVATIVES

John L. Archibald, Windsor, and Terence J. Ward, Slough, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Nov. 8, 1978, Ser. No. 958,763
Claims priority, application United Kingdom, Dec. 1, 1977, 50053/77
Int. Cl.[2] A61K *31/445;* C07D *401/06, 409/14*
U.S. Cl. 424—267 5 Claims

1. A method of alleviating depression in a warm blooded animal afflicted with depression which method comprises administering to said animal an effective anti-depressant amount of a compound of formula II,

(II)



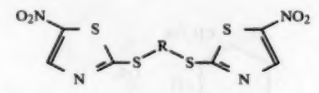
or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof wherein R^5 represents hydrogen, hydroxy, lower alkoxy or lower alkyl, R^6 represents hydrogen or lower alkyl, and R^7 represents phenyl, lower alkoxy phenyl, halophenyl, or thenyl and X represents oxygen or sulphur.

4,209,522
ANTIMICROBIAL BIS(5-NITRO-2-THIAZOLYL)THIOISOTHIAZOLES AND THIADIAZOLES

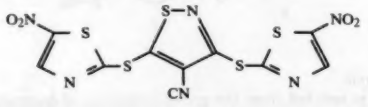
Craig E. Mixan, Midland, and George A. Burk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1978, Ser. No. 919,883
Int. Cl.[2] A01N *9/12;* A61L *13/00;* C07D *417/14*
U.S. Cl. 424—270 6 Claims

1. A compound of the formula



or of the formula



wherein R is the thiadiazole radical.

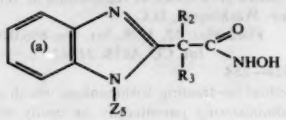
5. A method for controlling bacteria and fungi which comprises applying to said bacteria and fungi or their habitat an antimicrobially-effective amount of a compound of claim 1.

4,209,523
ACETOHYDROXAMIC ACIDS

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Division of Ser. No. 778,543, Mar. 17, 1977, Pat. No. 4,122,186.
This application Aug. 4, 1978, Ser. No. 930,924
Claims priority, application United Kingdom, Mar. 23, 1976, 11710/76; Feb. 15, 1977, 06298/77
Int. Cl.[2] A61K *31/415;* C07D *235/16*
U.S. Cl. 424—273 B 4 Claims

1. A compound selected from acetohydroxamine acid, a non-toxic metal salt of said acid or a non-toxic acid addition salt of said acid, said acid being of the formula:



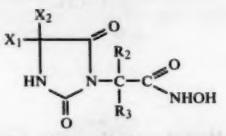
in which R_2 and R_3 are individually selected from hydrogen or C_1 to C_6 alkyl and Z_5 is phenyl or naphthyl, or phenyl or naphthyl substituted with one or two substituents selected from C_1 to C_4 alkyl, C_1 to C_4 alkoxy, methylenedioxy, halogen, CF_3, NO_2 or NH_2 and the nucleus (a) being unsubstituted or substituted with one or two substituents selected from C_1 to C_4 alkyl, C_1 to C_4 alkoxy, methylenedioxy, halogen, CF_3, NO_2 or NH_2.

4,209,524
ACETOHYDROXAMIC ACIDS

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Division of Ser. No. 778,543, Mar. 17, 1977, Pat. No. 4,122,186.
This application Aug. 4, 1978, Ser. No. 930,928
Claims priority, application United Kingdom, Mar. 23, 1976, 11710/76; Feb. 15, 1977, 06298/77
Int. Cl.[2] A61K *31/415;* C07D *233/66*
U.S. Cl. 424—273 R 7 Claims

1. A compound selected from an acetohydronamic acid, a non-toxic metal salt of said acid or a non-toxic acid addition salt of said acid when X_1 contains a basic group; said acid being of the formula:



in which R_2 and R_3 are individually selected from hydrogen or C_1 to C_6 alkyl, X_1 is phenyl or phenyl substituted with one or two substituents selected from C_1 to C_4 alkyl, C_1 to C_4 alkoxy, methylenedioxy, halogen, CF_3, NO_2 or NH_2, and X_2 is selected from X_1, hydrogen or a C_1 to C_6 alkyl.

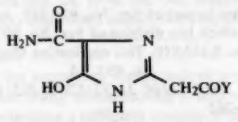
7. A pharmaceutical composition comprising a psychotropically effective amount of at least one agent selected from a compound according to claim 1 in a pharmaceutically acceptable excipient.

4,209,525
IMIDAZOLE ACETIC ACID DERIVATIVES

Toshio Atsumi, Ashiya; Yuzo Tarumi, Nishinomiya, and Takao Kiyohara, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Higashi, Japan

Filed Dec. 19, 1978, Ser. No. 971,826
Claims priority, application Japan, Jan. 6, 1978, 53-662
Int. Cl.[2] A61K *31/415;* C07D *233/90*
U.S. Cl. 424—273 R 2 Claims

1. A compound of the formula,



wherein Y is hydroxy, lower alkoxy or amino, and its pharmaceutically acceptable salts.

2. A pharmaceutical composition useful as an immunostimulant which comprises an immunostimulatory amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,209,526

ANTIVIRAL ARYLENEDIOXYALKYL SUBSTITUTED PYRAZOLES

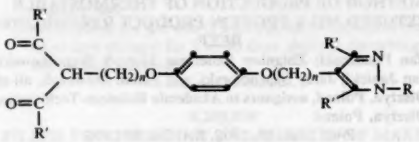
Guy D. Diana, Stephentown, and Philip M. Carabateas, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 822,246, Aug. 5, 1977, Pat. No. 4,171,365. This application Feb. 1, 1979, Ser. No. 8,412

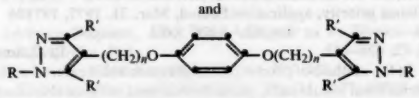
Int. Cl.[2] A61K *31/415;* **C07D** *231/12*

U.S. Cl. 424—273 P **6 Claims**

1. A compound of the formula selected from the group consisting of



and



wherein

R is hydrogen or lower-alkyl of 1 to 6 carbon atoms;

R′ is alkyl of 1 to 4 carbon atoms; and n is an integer from 3 to 7;

or a pharmaceutically acceptable acid-addition salt thereof.

5. A method for combatting viruses which comprises contacting the locus of said viruses with an antivirally effective amount of at least one compound according to claim 1.

4,209,527

BENZIMIDAZOLONE DERIVATIVES

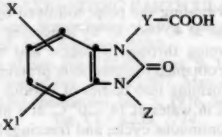
Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 16, 1979, Ser. No. 39,264

Int. Cl.[2] C07D *235/26;* **A61K** *31/415*

U.S. Cl. 424—273 B **26 Claims**

1. A compound selected from the group consisting of 3-(substituted methyl)-2-oxo-1-benzimidazoline-alkanoic acids of the formula:



and the lower alkyl esters and unsubstituted amide derivatives thereof, and the base salts of said acids with pharmacologically acceptable cations wherein

X is hydrogen and X^1 is hydrogen, fluorine, chlorine, bromine, lower alkyl or lower alkoxy; or

X and X^1, when taken separately, are each chlorine, lower alkyl or lower alkoxy, and when taken together are $—OCH_2(CH_2)_nO—$ wherein n is zero or one;

Y is alkylene having from one to three carbon atoms arranged in a straight or branched chain; and

Z is a member selected from the group consisting of naphthylmethyl, furfuryl, thenyl, phenylalkyl having up to three carbon atoms in the alkyl moiety and benzoylmethyl, and ring-substituted phenylalkyl having up to three carbon atoms in the alkyl moiety and ring-substituted benzoylmethyl with each ring having up to two substituents on the phenyl moiety wherein each of said ring substituents is identically chosen from the group consisting of fluorine, chlorine, bromine, trifluoromethyl, lower alkyl and lower alkoxy, or is separately chosen from the group consisting of chlorine, methyl, methoxy and trifluoromethyl.

25. A method for treating a diabetic host to prevent or alleviate diabetes-associated chronic complications arising in said host, which comprises administering to said diabetic host an effective amount of a compound as claimed in claim 1.

4,209,528

ANTISECRETORY OXAMIC ACID ESTERS

John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia; Dieter H. Klaubert, Perkiomenville, all of Pa., and David A. Shriver, Martinsville, N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,121

Int. Cl.[2] A61K *31/275*

U.S. Cl. 424—304 **8 Claims**

1. A process for treating peptic ulcer disease which comprises administering to a mammal in need thereof an N-substituted lower alkyl or phenyl ester of oxamic acid in which the N-substituent is:

2-cyano-3-aminophenyl-;

2-cyano-3-methylaminophenyl-;

2-cyano-3-dimethylaminophenyl-;

2-cyano-3-ethylmethylaminophenyl-;

2-cyano-3-diethylaminophenyl-;

3-cyano-5-nitrophenyl-;

or

2-cyano-3-pentyloxyphenyl-.

4,209,529

FARNESYL CARBOXYLIC ACID α-BISABOLOL ESTER, A MUCOSAL STABILIZING COMPOSITION AND METHOD OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Company Limited, Japan

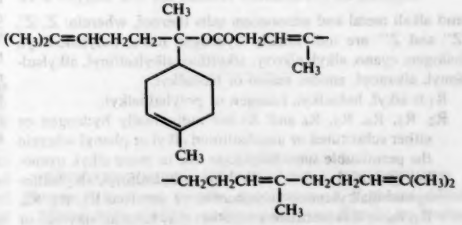
Filed May 30, 1978, Ser. No. 910,776

Claims priority, application Japan, May 31, 1977, 52-62765; Jun. 10, 1977, 52-69063

Int. Cl.[2] A61K *31/23;* **C09F** *5/08*

U.S. Cl. 424—312 **4 Claims**

1. Farnesyl carboxylic acid α-bisabolol ester of the formula,



3. A method for treating peptic ulcer comprising administering to a mammal an amount of farnesyl carboxylic acid α-bisabolol ester as defined in claim 1 effective as an anti-peptic ulcerative agent.

4,209,530

INSECT CONTROL COMPOSITIONS EMPLOYING ABSCISIC ACID

Saralee N. Visscher, Bozeman, Mont., assignor to Endowment and Research Foundation at Montana State University, Bozeman, Mont.

Filed Jul. 28, 1978, Ser. No. 929,116
Int. Cl.[2] A01N *9/24*
U.S. Cl. 424—317 6 Claims

1. A method of controlling phytophagous insects selected from the group consisting of the Tettigoniidae and the Locustidae, which comprises applying abscisic acid contained in a carrier to plants wherein the concentration of said abscisic acid in said carrier ranges from about 6 mg per liter to about 60 mg per liter; and permitting said insects to feed on said plants, thereby reducing the ability of the said insects to reproduce and thus control the proliferation of the insects.

4,209,531

METHOD FOR TREATING PHENYLKETONURIA

Helen K. Berry, Cincinnati, Ohio, assignor to Children's Hospital Medical Center, Cincinnati, Ohio

Filed Sep. 13, 1978, Ser. No. 941,931
Int. Cl.[2] A61K *31/195*
U.S. Cl. 424—319 4 Claims

1. Method of improving motor and cognitive functions in mammalian subjects afflicted with phenylketonuria by administering to said subjects a mixture consisting essentially of valine, isoleucine and leucine in a ratio of about 1 to about 0.5 to about 1, respectively, in a total effective amount of said mixture to improve motor and cognitive functions.

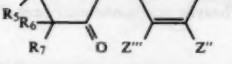
4,209,532

BIOCIDAL 2-ARYL-1,3-CYCLOHEXANE DIONE COMPOUNDS AND ALKALI METAL AND AMMONIUM SALTS THEREOF

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,985
Int. Cl.[2] C07C *49/80*; A01N *9/24, 9/14*; C07C *121/76*
U.S. Cl. 424—331 47 Claims

1. A compound of the formula:



and alkali metal and ammonium salts thereof, wherein: Z, Z', Z'' and Z''' are individually hydrogen nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino or haloalkyl;

R_1 is alkyl, haloalkyl, halogen or polyhaloalkyl;

R_2, R_3, R_4, R_5, R_6 and R_7 are individually hydrogen or either substituted or unsubstituted alkyl or phenyl wherein the permissible substituents are one or more alkyl, cyano, halogen, nitro, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl or dialkylamino substituents; or any two R_2, R_3, R_4, R_5, R_6 or R_7 substituents together may form an alkylene or alkenylene chain having from 2 to 20 carbon atoms completing a 3, 4, 5, 6 or 7 membered ring structure;

with the proviso that R_1, R_2, R_3, R_4, R_5, R_6, R_7, Z, Z', Z'' substituents individually may not include more than ten aliphatic carbon atoms.

4,209,533

ANTIBACTERIAL AGENT AND METHOD

John R. Gilbertson, Pittsburgh, and Richard J. Crout, Monroeville, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Jan. 25, 1979, Ser. No. 6,347
Int. Cl.[2] A61K *31/045, 7/16*
U.S. Cl. 424—343 2 Claims

1. A method of inhibiting growth of bacteria comprising selecting said bacteria from the group consisting of *Clostridium butyricum, Clostridium perfringens, Streptococcus mutans, Streptococcus mutans BHT* and *Streptococcus sanguis,* and

exposing said bacteria to an effective concentration of a polyunsaturated long-chain alcohol selected from the group consisting of linolenyl alcohol and linoleyl alcohol.

4,209,534

METHOD OF PRODUCTION OF THERMOSTABLE TEXTURED MILK PROTEIN PRODUCT RESEMBLING BEEF

Stefan Poznanski; Zbigniew Smietana; Henryk Stypulkowski; Jan Janicki; Jerzy Szpendowski, and Zenon Szewczyk, all of Olsztyn, Poland, assignors to Akademia Rolniczo-Techniczna, Olsztyn, Poland

Filed Mar. 29, 1978, Ser. No. 891,493
Claims priority, application Poland, Mar. 31, 1977, 197104
Int. Cl.[2] A23C *9/12*
U.S. Cl. 426—42 10 Claims

1. In the method of production of thermostable textured milk proteins from whole milk, partially skimmed milk, or skimmed milk subject to pasteurization at 72°–78° or at 90°–92° C., for 15–30 seconds, with the addition of calcium salts or calcium and calcium-phosphate salts, the improvement comprising cooling 5–25% by volume of the milk to be processed to a temperature of 40°–70° C.,; mixing the cooled milk with animal or vegetable fats, or a mixture thereof, and with emulsifiers permitted for food; homogenizing the emulsifier-milk-fat mixture; combining the homogenized mixture with the remaining portion amounting to 75–95% by volume of the milk to be processed; buffering the combined mixture by the addition of an acid selected from the group consisting of lactic, citric, acetic hydrochloric and phosphoric acids thereby causing a partial decalcification of particles of calcium phosphocaseinate, so as to maintain a level of calcium bond with the milk proteins of 0.35–0.8 mmol/l.g of protein, and admixing with food colors; enzymatically coagulating all the casein and milk albumins; disintegrating and reducing the water content of the coagulate to 70–80% by weight to form a pulp granulating the coagulate containing said facts; carrying out a preliminary texturation of the granulated pulp by thermal plasticization at 60°–80° C. in an acidified aqueous solution at a pH of 5.6–6.2 and twisting or vibrating the pulp; followed by the principal texturation thereof at 40°–60° C. by squeezing in a screw extruding press forcing through a nozzle and stretching; and disintegrating the obtained textured milk proteins into pieces of various sizes or forming into bodies of various shapes; conditioning the pieces in water at 14°–20° C. at a pH of 6.5 to 7.0 repeatedly in a continuous cycle; and freezing, lyophilizing or storing the finished textured milk protein whereby a textured protein product having the rheological properties and hydrogen ion concentration of beef is produced.

4,209,535

KOJI PROCESS FOR PRODUCING SOY SAUCE

Wilmore Williams, Wheaton, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Nov. 28, 1978, Ser. No. 964,278
Int. Cl.[2] A23L *1/23, 1/238*
U.S. Cl. 426—46 11 Claims

1. In a method of producing koji for use in making soy sauce

wherein a koji culture is grown on a koji mixture containing soy beans and cereal grain, the improvement comprising:

(1) providing a koji mixture with an overall moisture content of between about 18% and 40%;

(2) inoculating the koji mixture with koji culture;

(3) forming a bed of the inoculated koji mixture to a bed depth of 8 to 50 inches in a receptacle having a perforated bottom, airflow means for communicating with said perforated bottom for forcing room air through the said bottom and through said receptacle, temperature sensing means disposed within the said bed of inoculated koji mixture, and actuating means for actuating said airflow means in response to said temperature sensing means;

(4) controlling the room air between about 5° C. and 38° C. and the relative humidity above at least 50%.

(5) controlling the temperature of the said bed of inoculated koji mixture within the range of 15° C. to 42° C. by actuating said airflow means in response to the temperature sensing means whereby room air is flowed through the perforated bottom and through the bed of inoculated koji mixture; and

(6) continuing the growth of koji culture in the bed of inoculated koji mixture for 2 to 10 days without disturbing the bed of koji mixture.

4,209,536

FILLED FOOD PRODUCT AND METHOD OF MAKING SAME

Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero & C. S.p.A, Alba, Italy

Filed Aug. 30, 1978, Ser. No. 938,144

Claims priority, application Italy, Sep. 21, 1977, 69081 A/77

Int. Cl.[2] A21D *13/00*

U.S. Cl. 426—94 **9 Claims**

1. A substantially spherical filled food product comprising an outer closed shell of pastry enclosing a soft filling, said shell being seamless and consisting of an oven-baked yeastless pastry which is a baked mixture of flour, whole eggs and edible fat having a humidity content not exceeding 1% by weight and a relatively course-cellular inner structure in which the cell size decreases from the center towards the exposed outer surface of the shell so that said outer surface is substantially impervious to humidity and air and said product is buoyant in commestible aqueous liquids, said shell having an outer diameter in the range from 10 mm to 20 mm with the egg matter content in the shell corresponding to a ratio of the whole egg to flour from 1:1 to 3:1 by weight and the cellular structure-building aid in the baked dough of the shell consisting of the white of egg and said filling containing an amount of humidity substantially not exceeding 2% by weight while the weight-ratio of the filling and shell is at least 2:1.

4,209,537

METHOD FOR EXPANDING PARTICULATE MATERIAL

Michael J. Wood, Westminster, Calif., assignor to J. P. Burroughs & Son, Inc., Saginaw, Mich.

Continuation of Ser. No. 712,691, Aug. 9, 1976, abandoned, which is a division of Ser. No. 472,977, May 24, 1974, Pat. No. 4,046,066. This application Jan. 5, 1978, Ser. No. 867,001

Int. Cl.[2] A23K *1/14*

U.S. Cl. 426—233 **10 Claims**

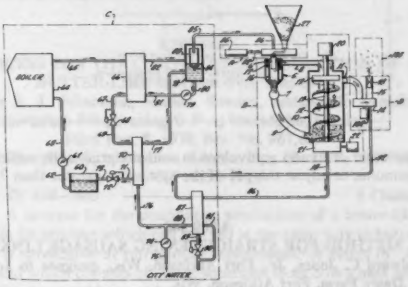
1. A continuous flow method of expanding particulate animal feedstuff material, having a moisture content, into puffed form, comprising the steps of:

(a) introducing quantities of such particulate material into an enclosed confined pressurized region having an inlet and an outlet and maintaining pressure in said pressurized region whereby processing may continue while additional particulate material is added,

(b) pressurizing and heating said particulate material in said pressurized region by contacting it with a first flow of high enthalpy steam,

(c) separating substantially all of the first flow of steam from the material in said pressurized region, to remove the first flow of steam which has become wetter,

(d) transporting said particulate material in a substantially continuous manner from said pressurized region past said outlet to an enclosed confined nozzle region having a restrictive opening, said nozzle region having an enthalpy, and contacting said material in the nozzle region with a second flow of steam which is dry and has not previously been exposed to said material,



(e) ejecting said second flow of steam with said particulate material through said restrictive opening into a region of lower pressure than the pressure in said nozzle region in a manner to expand said material into puffed form, and

(f) controlling and maintaining the enthalpy of said steam with said material as they pass through the nozzle region within a predetermined range so as to provide a desired expanded material.

4,209,538

METHOD FOR INHIBITING FUNGI IN CITRUS FRUIT

Richard E. Woodruff, Salinas, Calif., assignor to TransFRESH Corporation, Salinas, Calif.

Continuation of Ser. No. 784,527, Apr. 4, 1927, abandoned, which is a continuation-in-part of Ser. No. 715,291, Aug. 18, 1976, abandoned. This application Mar. 9, 1979, Ser. No. 18,946

Int. Cl.[2] A23B *7/00*

U.S. Cl. 426—314 **6 Claims**

1. A method for inhibiting fungi in citrus fruit comprising subjecting said citrus fruit to a controlled or modified atmosphere effective for inhibiting said fungi that includes by volume, about 1% to about 25% carbon monoxide, about 1% to about 25% carbon dioxide, from about 3% to less than about 21% oxygen, and the balance substantially all nitrogen.

4,209,539

DETOXIFICATION OF BOTANICAL FOODSTUFFS

Thomas F. Banigan, Arcadia, and Anthony J. Verbiscar, Sierra Madre, both of Calif., assignors to Anver Bioscience Design, Inc., Sierra Madre, Calif.

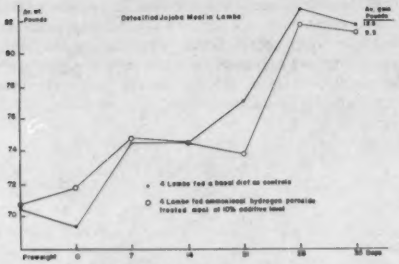
Filed Oct. 12, 1978, Ser. No. 950,688

Int. Cl.[2] A23B *9/00*

U.S. Cl. 426—319 **10 Claims**

1. Method of detoxifying feed by removing cyano groups

from a botanical material which comprises contacting said material with at least two moles of aqueous hydrogen peroxide



per mole of cyano equivalent in said material with sufficient ammonia to adjust the pH of the system to greater than 7.0.

4,209,540

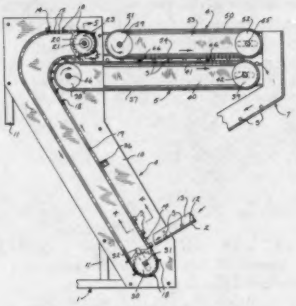
METHOD FOR STRAIGHTENING SAUSAGE LINKS

Edward C. Jones, Jr., Fort Atkinson, Wis., assignor to Jones Dairy Farm, Fort Atkinson, Wis.

Division of Ser. No. 756,483, Jan. 3, 1977. This application Jan. 17, 1979, Ser. No. 4,000

Int. Cl.[2] **B65B** *55/00*; **A23P** *1/00*

U.S. Cl. 426—414 **6 Claims**



1. A method of straightening sausage links, comprising the steps of chilling naturally bowed sausage links to a temperature such that the links can be straightened and will substantially retain the straightened configuration, introducing the chilled sausage links between a pair of cooperating belts, and operating the belts in the same direction and at different speeds to thereby rotate the links about their axes and straighten the links.

4,209,541

PRODUCTION OF BLAND, FUNCTIONAL, DEFATTED SOY FLOUR

Kenneth Clatfelter, Moorestown; George M. LoPresti, Mt. Laurel; Joseph A. Conte, Waterford, all of N.J., and Benito O. deLumen, El Cerrito, Calif., assignors to Campbell Soup Company, Camden, N.J.

Filed Oct. 10, 1978, Ser. No. 949,862

Int. Cl.[2] **A23L** *1/20*

U.S. Cl. 426—430 **10 Claims**

1. A process for producing bland, functional, defatted soy flour comprising:

inactivating the lipoxidase by heating a batch of hulled soybean material to substantially or completely inactivate lipoxidase, said heating including first passing steam through said batch of soybean material and then passing dry hot air through said batch of soybean material while substantially continuously agitating the soybean material;

dehulling and cracking said heated soybean material to produce particles of soybean material;

defatting said particles of soybean material in an inert atmosphere;

washing the defatted soybean material in an inert atmosphere to remove polar lipids; and

drying and milling the defatted and washed particles of soybean material to produce defatted soy flour.

4,209,542

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF A FOODSTUFF BY ADDING TO A FOODSTUFF A MIXTURE OF 1-ACYL-2,6,6-TRIMETHYLCYCLOHEXENE DERIVATIVES

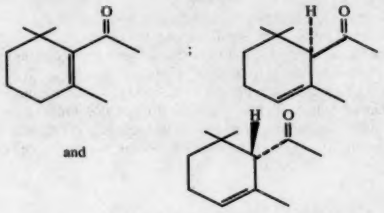
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Joaquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 965,418, Dec. 1, 1978, Pat. No. 4,172,850. This application May 15, 1979, Ser. No. 39,360

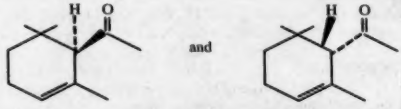
Int. Cl.[2] **A23L** *1/226, 1/235*

U.S. Cl. 426—538 **2 Claims**

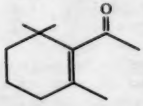
1. A process for augmenting or enhancing the aroma or taste of a foodstuff having a minty, lemony or tropical fruit aroma or taste comprising the step of adding to said foodstuff from about 0.5 parts per million up to about 100 parts per million based on the foodstuff flavor composition of a mixture consisting essentially of compounds having the structures:



wherein the mixture contains 30% of the compounds having the structures:



and 60% of the compound having the structure:



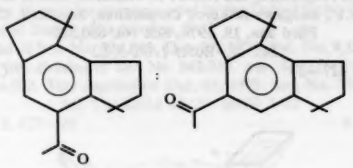
4,209,543

FLAVORING WITH A MIXTURE OF ACETYL HYDRINDACENES

Mark A. Sprecker, Sea Bright; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Joaquin Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,180
Int. Cl.[2] A23L *1/235*
U.S. Cl. 426—538 1 Claim

1. A process for augmenting or enhancing the pear, peach or apricot flavor of a foodstuff having a pear, peach or apricot flavor comprising the step of intimately admixing with said foodstuff from 0.001 ppm up to about 50 ppm by weight based on said foodstuff of a mixture of a 60:40 mixture of chemicals having, respectively, the structures:



(60%) (40%)

4,209,544

BLAND NEUTRALIZED CASEIN

Steven B. Zavagli, Elmwood Park, and Robert L. Kasik, Berwyn, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Division of Ser. No. 658,906, Feb. 18, 1976, Pat. No. 4,115,376, which is a continuation of Ser. No. 455,511, Mar. 24, 1974, abandoned. This application Feb. 16, 1978, Ser. No. 878,451
Int. Cl.[2] A23J *3/02*
U.S. Cl. 426—580 10 Claims

1. A process for producing a bland neutralized milk casein comprising forming an aqueous slurry of casein, holding the temperature of the slurry at between about 100° F. and about 210° F., adding to the slurry a reactant consisting essentially of a non-toxic water soluble, magnesium base in sufficient amount to produce a magnesium neutralized casein and separating the neutralized casein from the slurry to produce white, bland, neutralized casein.

4,209,545

INSTANTIZED BLEND OF CASEINATE AND SOYA PROTEIN

Abraham Schapiro, P.O. Box 548, Kentfield, Calif. 94904

Continuation-in-part of Ser. No. 726,612, Sep. 27, 1976, abandoned, and a continuation-in-part of Ser. No. 430,230, Jan. 2, 1974, Pat. No. 3,988,511, and a continuation-in-part of Ser. No. 156,040, Jun. 23, 1971, abandoned. This application Apr. 11, 1978, Ser. No. 895,356
The portion of the term of this patent subsequent to Oct. 21, 1993, has been disclaimed.
Int. Cl.[2] A23L *2/00*; A23J *3/00, 7/00*
U.S. Cl. 426—580 3 Claims

1. A method of instantizing a caseinate selected from the group consisting of sodium caseinate, calcium caseinate and mixtures of the two which comprises providing an instantized soya protein which is substantially free from added carbohydrate and which contains a surfactant as the instantizing agent, said instantized soya protein being the product of blending the surfactant with a small amount compared with the total amount of soya protein in the final instantized protein, of a substrate selected from the class consisting of soya protein and a sugar, and then adding soya protein to the substrate-surfactant blend in small increments until the total amount of soya protein has been added and blending each increment of soya protein with the previous blend of soya protein and substrate-surfactant blend before adding the next increment, then mixing the caseinate with the instantized soya protein by adding the caseinate in small increments until the total amount of caseinate has been added to the instantized soya protein and blending each increment of caseinate with the previous blend of caseinate and instantized soya protein before adding the next increment, the proportions of soya protein and caseinate being between about 25 and 75 parts by weight of caseinate to 75 to 25 parts by weight of soya protein.

4,209,546

PROCESS FOR THE CONTINUOUS PRODUCTION OF A BUTTER-LIKE EDIBLE FAT PRODUCT

Mats S. J. Johansson, Malmö, Sweden, assignor to Svenska Mejerierhas Riksforening U P A, Stockholm, Sweden

Filed Dec. 8, 1978, Ser. No. 967,667
Claims priority, application Sweden, Jan. 25, 1978, 7800900
Int. Cl.[2] A23D *3/02*
U.S. Cl. 426—603 8 Claims

1. A process for the continuous production of a butter-like edible fat product which can be used in the same way as butter and is spreadable at refrigerator temperature of about (6°–8° C.) and which consists of cream separated from cow's milk and a refined vegetable tocopherol-containing triglyceride oil, the oil amounting to 15–30% by weight of the total fat content of the edible fat product, the process comprising the steps of:

(1) adjusting the fat content of the cream to 36–38% by weight,

(2) then cooling the cream to 3°–4° C. and introducing it into a storage tank,

(3) keeping the cooled cream in said tank for at least 3 hours,

(4) then pumping the cream in a stream from said tank to a continuous butter making machine of the Fritz type,

(5) injecting the oil into said stream at an admixture station between said tank and said butter making machine,

(6) finely dividing and emulsifying the injected oil in said stream after said admixture station but ahead of said butter making machine by mixing means,

(7) adjusting the relative amounts of the cream and the injected oil in the mixture entering said butter making machine so that the mixture will obtain a total fat content of more than 40% by weight,

(8) supplying the cream and the oil to said stream at such temperatures that the mixture entering said butter making machine will have a temperature of 5°–6° C.,

(9) and effecting the churning in said butter making machine at a temperature of 5°–7° C.

4,209,547

HIGH MELTING FAT COMPOSITION AND PROCESS OF MAKING

Daniel A. Scarpiello, Parma Heights, and Anthony G. Herzing, Middleburg Heights, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,241
Int. Cl.[2] A23D *5/00*
U.S. Cl. 426—607 13 Claims

9. A process for manufacturing an edible hard butter composition suitable as a cocoa butter replacement, having improved meltability, lack of waxiness, and overall organoleptic acceptability, blended using a higher melting point fat, as compared to a conventional cocoa butter replacement hard butter, comprising a selectively hydrogenated glyceride oil and at least two lipoidal emulsifiers therefor, which comprises terminating a selective hydrogenation of a glyceride oil when the Mettler Dropping Point of said glyceride oil is between about 104° and 109° F. to obtain said selectively hydrogenated glyceride oil, said selectively hydrogenated oil containing at least about 98% C_{16}–C_{18} triglycerides of which between about 8% and 30% is of a C_{16} fat-forming acid content, having a Solids Fat Index profile of about

62–68 at 50° F.
49–60 at 70° F.
42–56 at 80° F.
22–34 at 92° F.

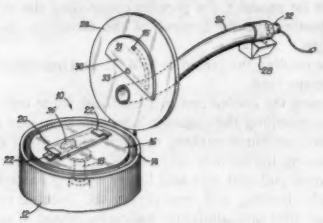
7–18 at 100° F.; and blending with said selectively hydrogenated oil between about 1% and 5% of at least two lipoidal emulsifiers selected from the group consisting of partial glycerides of higher fatty acids, polyoxyalkylene derivatives of partial glycerides of higher fatty acids, sorbitol and sorbitan esters of higher fatty acids, polyoxyalkylene derivatives of sorbitol and sorbitan esters of higher fatty acids, polyglycerol esters of higher fatty acids, and polyoxyalkylene derivatives of polyglycerol esters of higher fatty acids wherein said higher fatty acids are C_8–C_{28} fatty acids.

4,209,548

METHOD FOR THE PREPARATION OF BLOOD SAMPLES FOR AUTOMATED ANALYSIS

James W. Bacus, Hinsdale, Ill., assignor to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

Continuation of Ser. No. 737,532, Nov. 1, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 862,735
Int. Cl.² B44D *1/02*
U.S. Cl. 427—2 **7 Claims**



1. A method for preparing a blood specimen having a monolayer of separated red blood cells on a slide suitable for automated analysis, said method comprising the steps of: spinning a sample on a slide about an axis perpendicular to the support for a short period of time to develop a satisfactory monolayer within an enclosed chamber to separate the red blood cells and to throw excess red blood cells radially outwardly from the slide to form an evenly distributed monolayer of red blood cells, subjecting said monolayer of red blood cells on said slide to a fixing agent for a fixing period subsequent to spinning and prior to drying to fix the natural shapes thereof before the red blood cells flatten during drying on the slide, and drying the fixed red blood cells for later automated analysis.

4,209,549

PROCESS FOR TREATING FABRICS WITH FABRIC TREATMENT COMPOSITIONS

Alan P. Murphy, Cincinnati, and Fred M. Habermehl, III, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 440,931, Feb. 8, 1974, Pat. No. 4,127,694. This application May 30, 1978, Ser. No. 910,410
Int. Cl.² B05D *1/00*
U.S. Cl. 427—11 **3 Claims**

1. A process for treating fabrics in an automatic dryer comprising commingling pieces of damp fabric by tumbling said fabrics under heat in a clothes dryer with an effective amount of a fabric treating composition consisting essentially of

I. a static-controlling amount of a hygroscopic surfactant of the formula $R—O—(C_2H_4O)_x—C_2H_4OH$ wherein R is selected from the group consisting of primary, secondary and branched chain alkyl hydrocarbyl moieties; primary, secondary and branched chain alkenyl hydrocarbyl moieties; and primary, secondary and branched chain alkyl- and alkenyl-substituted phenolic hydrocarbyl moieties; said hydrocarbyl moieties having a hydrocarbyl chain length of from about 10 to about 18, and wherein x is an integer of from about 35 to about 50, and

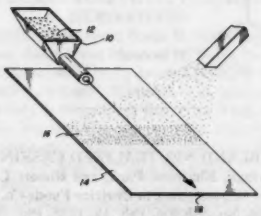
II. a softening amount of a fabric softener consisting essentially of a transesterified mixture of fatty glycerides containing from about 20% to less than about 30% by weight of soap and having a melting point above about 40° C. and a fatty alcohol having about 10 to about 20 carbon atoms at a weight ratio of glycerides:alcohol of from about 7:3 to about 9:1.

4,209,550

COATING CARRIER MATERIALS BY ELECTROSTATIC PROCESS

Robert J. Hagenbach, and Robert G. Johnston, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 19, 1976, Ser. No. 650,337
Int. Cl.² B05D *1/06, 3/02*
U.S. Cl. 427—27 **7 Claims**



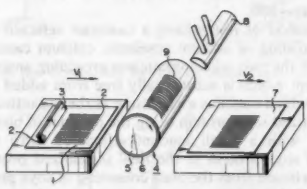
1. A method of preparing coated electrostatographic carrier particles having an average particle diameter of from between about 30 and about 1,000 microns consisting of rolling carrier cores down an inclined plane, spraying said rolling carrier cores with a spray of oppositely charged polymer resin coating material in particle form whereby said coating material is electrostatically attracted to said carrier cores, and heating the electrostatically coated carrier cores until said coating material is fused to said carrier cores, said carrier cores being selected from the group consisting of nickel, steel, iron, and ferrites, and wherein said coating material is present in an amount of from about 0.01 percent to about 1.0 percent by weight based on the weight of said coated carrier particles.

4,209,551

METHOD OF FABRICATING A PHOSPHOR SCREEN OF A COLOR TELEVISION PICTURE TUBE

Tatsuo Masaki, Tanashi; Keiji Miyajima, Kashiwa; Kenzo Fukuyoshi, Niiza, and Hiroji Kumagai, Narashino, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,189
Int. Cl.² B05D *5/12, 1/40*
U.S. Cl. 427—68 **16 Claims**



1. A method for manufacturing a phosphor screen for a color picture tube comprising the steps of transferring an ink

pattern contained on an intaglio having a surface comprising ink receiving portions with a depth of 10μ or more, said ink containing 15 to 90% by volume of phosphor powder, by rotatably moving at a first speed a transcriber having a cylindrical surface covered with a 0.2 to 3.0 mm thick layer of a soft material having a rubber hardness of 50° or less, along the surface of the intaglio in order to apply the ink pattern onto the cylindrical surface of the transcriber and transcribing said ink pattern from said transcriber onto an object to be printed for a color picture tube by rotatably moving the transcriber at a second speed along the surface of said object, said second speed being higher than said first speed.

4,209,552

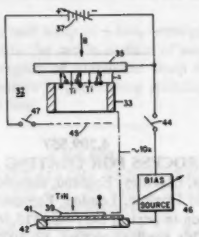
THIN FILM DEPOSITION BY ELECTRIC AND MAGNETIC CROSSED-FIELD DIODE SPUTTERING

Kimo M. Welch, Mountain View, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 734,841, Oct. 22, 1976, Pat. No. 4,151,325, which is a division of Ser. No. 565,019, Apr. 3, 1975, Pat. No. 4,006,073. This application Dec. 18, 1978, Ser. No. 970,844

Int. Cl.[2] H01J *43/28*; B05D *5/12*

U.S. Cl. 427—78 **6 Claims**



1. A method for minimizing multipactoring of a microwave circuit component including the step of coating the component with titanium nitride.

4,209,553

METHOD AND APPARATUS FOR MAKING MATERIAL WITH A FUSIBLE BACKING

Robert Greenberg, 55 East End Ave., New York, N.Y. 10028

Continuation of Ser. No. 827,017, Aug. 23, 1977, abandoned, which is a division of Ser. No. 653,596, Jan. 29, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,370

Int. Cl.[2] B05D *1/32, 5/00*

U.S. Cl. 427—179 **9 Claims**

1. A method for manufacturing material with a fusible backing comprising:

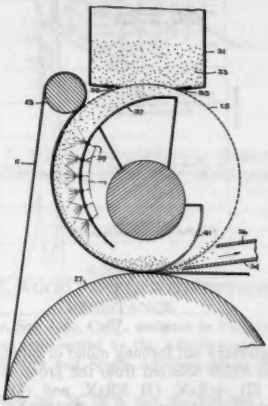
(a) bringing a lining substrate into contact with the outside of a rotatable screen print drum over a substantial portion of its circumference, and in such a manner that the substrate material is free of any underlying support at least over most of said substantial portion by steps comprising:

i. disposing a rotating roll such as to contact said substrate at a point near the bottom of said drum so as to hold it in contact therewith;

ii. disposing a first idler roller so as to contact said substrate at a point above said rotating roll holding the substrate in contact with said print drum thereby establishing contact with said substrate over a substantial portion of said print drum;

iii. partially wrapping said substrate around said rotating roll prior to supplying said substrate to said first idler roll by disposing a second idler roll such as to hold said substrate in contact with said rotating roll, whereby the substrate will be fed to the printing drum by the rotating roll in perfect synchronization to obtain lock step operation;

(b) supplying a fine free-flowing fusible polymer dust to the inside of said drum by gravity through the screen thereof by disposing a hopper above the top of said drum, said substantial portion at which said substrate is in contact with said print drum extending from a point below said hopper on one side of said drum to the bottom of the drum, to thereby apply said fine free-flowing polymer



dust to said drum and through said drum to said substrate over said bottom;

(c) bringing said substrate with said polymer dust thereon out of contact with said screen at the point where said rotating drum contacts said substrate;

(d) scraping excess polymer from the inside of said drum at the point where said substrate is brought out of contact with said drum; and

(e) heating said substrate and polymer dust to fuse said polymer dust to said substrate material.

4,209,554

POLYDENTATE METAL SALTS USED IN THE PROCESS FOR THE DEACTIVATION OF GLASS SURFACES AND CAPILLARY COLUMNS THEREWITH

Sean G. Traynor, and George Marcelin, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Filed Feb. 22, 1979, Ser. No. 14,131

Int. Cl.[2] B01D *53/04, 15/08*

U.S. Cl. 427—230 **8 Claims**

1. A process for deactivating glass capillary columns which comprises treating the internal surfaces of a capillary column with one or more deactivating polydentate salts either prior to or in conjunction with the application of liquid substrate capable of separating complex mixtures of compounds using gas chromatographic techniques wherein the said columns are operated up to 300° C. and above and wherein the salts comprise the reaction product of

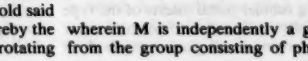
(a) a polydentate compound containing two or more quaternizable group V-A elements of the following formula:

(1) $R_1R_2MAMR_1R_2$;

(2) $(R_1R_2MA)_3M$;

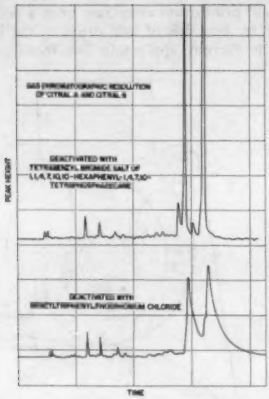
(3) $(R_1R_2MA)_2MR_3$;

(4) $(R_1R_2MA)_2MAM(AMR_1R_2)_2$; and



wherein M is independently a group V-A element selected from the group consisting of phosphorus, antimony and ar-

senic; R_1, R_2 and R_3 are the same or different C_{1-20} alkyl radical, or an aromatic radical containing up to twelve carbon atoms and A represents a straight chain or branched lower alkylene radical containing from 2 to 6 carbons; n is an integer from 1 to 6; and



(b) a quaternary salt forming mono or difunctional alkyl or aralkyl halide selected from the group consisting of (1) R_4X; (2) ArR_5X; (3) XR_6X; and (4) XCH_2MCH_2X wherein X is halogen; R_4 is an alkyl radical containing 2 to 6 carbon atoms; R_6 is lower alkylene radical containing 2 to 6 carbon atoms; Ar is a mono or divalent aryl radical which may contain one or more halogen ring substituents.

4,209,555

CORROSION RESISTANT GALVANIC COATING

Joe W. Stewart, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 26, 1979, Ser. No. 6,745
Int. Cl.[2] C09D *5/10*
U.S. Cl. 427—292 **12 Claims**

1. A protective coating composition to be applied to a metal substrate to cathodically protect the substrate when exposed to heated water, consisting essentially of (a) a dry finely divided mixture of 50–400 parts by weight zinc dust, 50–200 parts by weight of high purity aluminum powder, 50–150 parts by weight of sodium aluminum silicate, 1–5 parts by weight of a thixotrope, and a material selected from the group consisting of 1 to 10 parts by weight of iron oxide and 20 to 110 parts by weight titanium dioxide, and (b) a liquid, evaporable, non-aqueous carrier containing partially hydrolyzed ethyl silicate, said ethyl silicate being 70% to 90% hydrolyzed, said coating composition being dried after application to the metal substrate to evaporate the carrier and subsequent exposure to moisture acting to substantially fully hydrolyze the ethyl silicate to produce a hard adherent coating on said substrate.

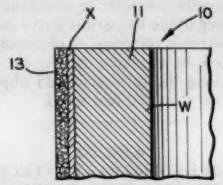
4,209,556

METHOD OF PROCESSING GLAZED TUBULAR INSERTS

Raymond L. Brandeberry; Lawrence B. Ginther, both of Toledo; Glen J. Lehr, Oregon, and Paul F. Sanford, Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 849,780, Nov. 3, 1976, abandoned. This application Dec. 8, 1978, Ser. No. 967,527
Int. Cl.[2] B05D *3/00*
U.S. Cl. 427—330 **11 Claims**

1. A method for processing tubular metal inserts of the type having a layer of glass frit physically adhered to their outer surface for use in forming apertures in all-glass multiple sheet glazing units, comprising the steps of heating the frit coated metal inserts in a vacuum to a temperature sufficient to remove any dissolved and absorbed gases from the layer of glass frit physically adhered thereto, heating the coated, degassed metal inserts in an oxygen-inert gas atmosphere to a temperature



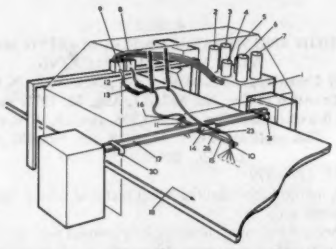
below the sintering temperature of the glass frit which is sufficient to develop a layer of metallic oxide on the surface of the metal inserts without sintering the glass frit layer, and heating the frit coated metal inserts at an elevated temperature in an inert atomsphere to sinter and glaze the layer of glass frit without destroying the layer of metallic oxide.

4,209,557

PROCESS FOR COATING A WEB

Harry Edwards, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 818,266, Jul. 22, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,257
Claims priority, application United Kingdom, Apr. 13, 1977, 15284/77
Int. Cl.[2] B05D *1/02, 3/02*
U.S. Cl. 427—373 **3 Claims**



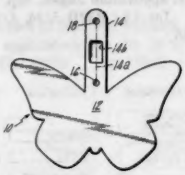
1. Process for dispensing a liquid reaction mixture onto web or sheet material which comprises:
(a) advancing web or sheet material in a first line of motion;
(b) feeding a supply of liquid reaction mixture to a distributor attached to a carriage which is drivably mounted for reciprocation in a second line of motion transverse to the first line of motion of the sheet or web material;
(c) depositing the liquid reaction mixture on the web or sheet material from the distributor while the carriage is reciprocated; and
(d) thereafter allowing the mixture to react, the distributor being allowed to move freely relative to the carriage and transversely to the direction of advancement of the web or sheet material while the carriage is decelerated prior to reversal of its direction of motion.

4,209,558

NONSPLITTING MOLDED PLASTIC STRAP CONFIGURATION

James E. Fayal, Stonington, Conn., assignor to Greene Plastics Corporation, Hope Valley, R.I.

Filed Mar. 5, 1979, Ser. No. 17,194
Int. Cl.[2] A47G 29/10
U.S. Cl. 428—28 **10 Claims**



1. A molded plastic article of manufacture comprising, in combination:

A. a body;

B. an elongated strap integrally joined with said body, said strap including a longitudinally extending, weakened weld line therein created incidentally with the molding of said body and strap;

C. means securing said strap in a loop configuration; and

D. a relief molded in the inside surface of said looped strap at least in the region of maximum strap curvature, said relief being effective in preventing splitting of said strap along said weld line.

4,209,559

LINEAR CRYSTALLINE TEREPHTHALATE POLYESTER YARN AND TEXTILE GOODS MADE THEREFROM

Osamu Wada; Yoshiyuki Sasaki, both of Takatsuki; Shiro Kumakawa, Kyoto; Akio Kimura, Ashiya; Toshimasa Shimizu, Matsuyama; Hiroyuki Nagai, Ehime; Shunichi Takeda, Kyoto, and Takumi Shimazu, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 26, 1979, Ser. No. 23,918
Claims priority, application Japan, Mar. 27, 1978, 53-34042; Apr. 7, 1978, 53-40202; Apr. 7, 1978, 53-40203; May 8, 1978, 53-53785; May 22, 1978, 53-59883; Jul. 26, 1978, 53-90374
Int. Cl.[2] D02G 3/02; B32B 3/00, 7/02, 27/36
U.S. Cl. 428—91 **11 Claims**

9. A raised cloth in which at least a face portion thereof if composed essentially of a linear crystalline terephthalate polyester yarn containing extra-fine filaments, wherein each of the filaments has a fineness of 0.9 or less and an amorphous orientation (fa) in the range of 30% to 70%, wherein the structural integrity parameter ($\epsilon_{0.2}$) of said yarn is negative, and said face portion being raised to form a fluffy portion composed of free ends of said filaments.

4,209,560

COMPOSITE STRUCTURE REINFORCED IN THE X, Y, AND Z DIRECTIONS AND METHOD OF MAKING SAME

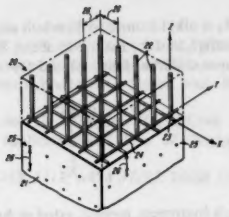
Thomas Vasilos, Winthrop, Mass., assignor to Avco Corporation, Wilmington, Mass.

Division of Ser. No. 901,197, Apr. 28, 1978, Pat. No. 4,165,355. This application Apr. 12, 1979, Ser. No. 29,287
Int. Cl.[2] C04B 35/76, 35/80
U.S. Cl. 428—109 **10 Claims**

1. A hot pressed composite structure reinforced in three directions—X, Y, and Z—comprising:

a matrix having a pressed and sintered structure;

a plurality of elongate reinforcing members embedded in said matrix in a parallel relation defining one of said directions X, a plurality of second elongate reinforcing members embedded in said matrix in a parallel relation defining a second of said directions Y, a plurality of third elongate reinforcing members embedded within said matrix in a parallel relation defining a third of said directions Z, said



directions X, Y, and Z being angularly displaced relative to one another defining a three dimensional geometric axis system.

4,209,561

STRUCTURAL WOOD PANELS WITH IMPROVED FIRE RESISTANCE

Paul M. Sawko, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,086
Int. Cl.[2] B32B 5/12
U.S. Cl. 428—114 **7 Claims**

1. Flame-resistant cellulosic composite which comprises finely divided wood particles bound together by about 10 to 33% on a weight basis, of a cured thermosetting resin made from a prepolymer prepared by the reaction of (1) an aralkylether of the general formula $R'[—(CH_2OR)]_a$, wherein R' is selected from the group consisting of divalent aromatic hydrocarbon radicals, trivalent aromatic hydrocarbonoxy radicals, R is an alkyl radical containing less than 6 carbon atoms, and a is equal to 2 or 3; with a molar excess of (2) a phenolic compound containing from 1 to 3 hydroxyl groups.

4,209,562

LATEX BLEND BINDER COMPOSITIONS FOR ASBESTOS SHEETS

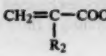
David W. Suwala, Flanders, and Eugene S. Barabas, Watchung, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 770,199, Feb. 18, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,476
Int. Cl.[2] C08K 7/12
U.S. Cl. 428—271 **19 Claims**

1. An asbestos sheet comprising asbestos fibers bonded together by a binder prepared from a binder latex blend of a synthetic rubber latex and a highly carboxylated polymer latex with a dispersed phase comprising (1) from about 80 to about 99.5 weight percent of a synthetic rubber, and (2) from about 0.5 to about 20 weight percent of a highly carboxylated polymer containing, as monomers, (a) from about 30 to about 85 parts by weight of an unsaturated carboxylic acid of the formula

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-COOH$$

in which R is methyl or ethyl, (b) from about 5 to about 50 parts by weight of an unsaturated carboxylic acid ester of the formula



in which R_1 is alkyl from 1 to 8 carbob atoms, R_2 is hydrogen, methyl or ethyl, and (c) from 0 to about 20 parts by weight of a termonomer different from (a) and (b) of the formula

wherein R_3 is hydrogen, methyl, ethyl or halogen, X_1 is hydrogen or C_1–C_{18} alkoxycarbonyl, and X_2 is a member selected from the group consisting of aryl, aminocarbonyl, cyano, C_1–C_4 alkoxy, carboxy, C_1–C_{18} alkoxycarbonyl, halo, acyl, aldehyde, keto, isocyanate, C_3–C_9 heterocyclic, C_1–C_4 alkyl, C_2–C_4 alkenyl, halomethylene, acetomethylene, sulfo, C_1–C_4 alkoxysilane and hydrogen, said polymer latex having been prepared by inducing in a reactor, at a temperature of from about 5° C. to about 80° C., a redox-initiated polymerization in an aqueous dispersion of said monomers wherein all of the ingredients necessary for the polymerization are present in the reactor upon initiation of the polymerization.

4,209,563

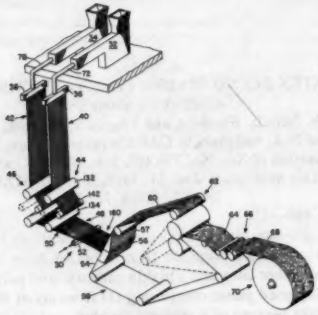
METHOD FOR MAKING RANDOM LAID BONDED CONTINUOUS FILAMENT CLOTH

James B. Sisson, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 584,312, Jun. 6, 1975, Pat. No. 4,107,364. This application Jun. 21, 1978, Ser. No. 917,703

Int. Cl.² D04H *1/58*

U.S. Cl. 428—288 **13 Claims**



13. Method of making an elastic cloth-like laminate comprising, at least the steps of, forming a synthetic organic elastomeric polymer to define a porous cloth-like layer, forming a synthetic organic stretchable but relatively non-elastic polymer to define a porous cloth-like layer, superposing such layers one above the other, bonding said layers together at a plurality of spaced apart bond points, stretching the resultant laminate to irreversibly stretch the non-elastic layer between the bond points, and subsequently thereto releasing the laminate so that the elastomeric layer recovers to thereby develop crimp in the non-elastic layer between said bond points.

4,209,564

FLEXIBLE FOAMED PRODUCT WITH SKIN AND PROCESS FOR ITS MANUFACTURE

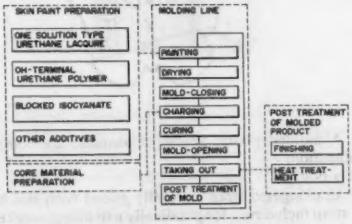
Takao Nomura, Toyota; Yoshio Taguchi, Nagoya; Kazuo Kobayashi, and Isao Sakata, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 23, 1979, Ser. No. 23,251

Claims priority, application Japan, Sep. 4, 1978, 53-108399

Int. Cl.² B32B *3/26, 5/18*

U.S. Cl. 428—315 **8 Claims**



1. A flexible foamed product having a skin, said skin being the cured reaction product of

(a) a linear urethane polymer,

(b) a polyol or an urethane prepolymer with an OH-terminal compatible with said linear urethane polymer, and

(c) a blocked isocyanate.

4,209,565

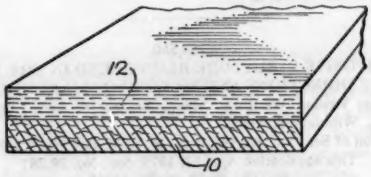
SELF-ADHERING STENCIL

Abraham D. Davis, Dolton, and Kenneth W. Pinter, Mundelein, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Division of Ser. No. 742,903, Nov. 18, 1976, Pat. No. 4,123,581. This application Apr. 24, 1978, Ser. No. 899,388

Int. Cl.² C09J *7/02*; B41N *1/24*

U.S. Cl. 428—347 **1 Claim**



1. A self-adhering stencil consisting of a stencil base tissue, a mechanically stencilizable layer present as a coating on the stencil base tissue, and a heat sensitive adhesive material present as a component of the stencilizable layer in an amount sufficient to yield a minimum bond strength of 2 grams per linear inch between the stencil and the substrate to which it is being adhered for bonding the stencil to a separate substrate.

4,209,566

METHOD OF IMPROVING THE ELECTRICAL PROPERTIES OF POLYMERIC INSULATIONS CONTAINING POLAR ADDITIVES, AND THE IMPROVED POLYMERIC INSULATION PRODUCT THEREOF

Joseph E. Betts, Westport, Conn., and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 816,855, Jul. 18, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,713

Int. Cl.[2] B32B *15/04;* H01B *3/00*

U.S. Cl. 428—389 18 Claims

17. An electrical conductor comprising a metallic conductive element having a halogen-containing flame resistant crosslink cured polyethylene compound insulation thereabout of enhanced electrical properties, said insulation comprising the heat reaction product of a halogen-containing flame retardant and a heat reactive, liquid silicone polymer comprising the product of a major amount of difunctional $(CH_3)_2SiO$ monomer units and a minor amount of trifunctional $CH_3SiO_{1.5}$ monomer units.

4,209,567

RED PIGMENT-COATED PHOSPHOR AND METHOD OF PRODUCING THE SAME

Takeshi Takahara, Yokosuka; Susumu Matsuura, Yokohama; Toshio Nishimura, Yokohama, and Nobuo Inoue, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 16, 1978, Ser. No. 961,263

Claims priority, application Japan, Nov. 24, 1977, 52-139889; Nov. 24, 1977, 52-139890

Int. Cl.[2] H01J *29/28, 29/20;* C09K *11/46*

U.S. Cl. 428—403 4 Claims

1. A red pigment-coated phosphor, comprising a red-emitting rare earth element-based phosphor body activated by europium and a red pigment coated on the phosphor body, said red pigment selected from the group consisting of indium sulfide and a mixed composition of In_2S_3 and A_2SO_4, wherein A is an alkali metal and wherein the A_2SO_4 covers the surface of the In_2S_3; said composition being formed in situ by baking the phosphor body coated with yellow complex sulfide having the formula $xA_2S{\cdot}yIn_2S_3$ wherein $(0.1 \leqq x/y \leqq 1.5)$ in an oxygen-containing atmosphere at about 400° to about 600° C. and wherein the ratio of A_2SO_4 to In_2S_3 is in the range of 0.1:1 to 1.5:1.

4,209,568

BENTONITE-GELLED OIL WATERPROOFING COMPOSITION

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Sep. 18, 1978, Ser. No. 942,935

Int. Cl.[2] E02D *27/40;* C09K *3/12;* B32B *29/06*

U.S. Cl. 428—454 12 Claims

1. A water-impervious panel comprising means for supporting a gelled bentonite composition in sheet form said means having a non-aqueous gelled bentonite composition applied to one side thereof, said non-aqueous bentonite composition comprising water swellable, non-hydrated bentonite, a non-aqueous liquid, and a gelling agent for said non-aqueous liquid mixed to form a mass capable of adhering to said composition support means in cohesive form.

4,209,569

BAKING FORM AND METHOD OF MAKING SAME

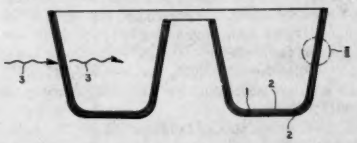
Robert Brugger, Filderstadt, Fed. Rep. of Germany, assignor to Langbein-Pfanhauser Werke AG, Neuss, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,746

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732668

Int. Cl.[2] A21B *3/13;* A47J *37/01;* B32B *15/20*

U.S. Cl. 428—472 4 Claims



1. A baking form consisting of aluminum sheet and having external and internal surfaces provided with respective aluminum oxide coatings formed unitarily with the sheet and colored black by the incorporation therein of a coloring metal and constituting an infrared absorber and an infrared transmitter, respectively.

4,209,570

HOMOGENEOUS BRAZING FOILS OF COPPER BASED METALLIC GLASSES

Nicholas J. DeCristofaro, Chatham, and Claude Henschel, Mt. Freedom, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 2, 1978, Ser. No. 947,329

Int. Cl.[2] C22C *9/10;* C25D *7/06;* B21C *37/02*

U.S. Cl. 428—606 5 Claims

1. A homogeneous ductile brazing foil having at least partially glassy structure and a composition consisting essentially of 5 to 40 atom percent nickel, 15 to 20 atom percent phosphorus, the balance being copper and incidental impurities.

4,209,571

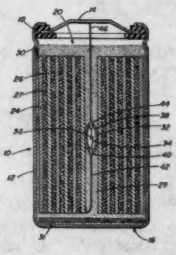
PRIMARY ELECTROCHEMICAL CELL

Richard A. Bessett, Derry, N.H.; James Epstein, Sharon, and Franz Goebel, Ashland, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 28, 1975, Ser. No. 608,424

Int. Cl.[2] H01M *6/50*

U.S. Cl. 429—7 4 Claims



1. A primary electrochemical cell comprising a hermetically sealed housing,

an electrochemical system disposed within the housing, said

electrochemical system having a pair of electrodes comprising an anode and a cathode, and an electrolyte in contact therewith, and

a thermal switch disposed within the housing, said switch being electrically connected between one of the electrodes and the terminal associated therewith and in series with the internal electrical circuit of the cell, said switch sensing the internal cell temperature and preventing the cell from discharging when the cell temperature exceeds a preselected level, and said thermal switch including tin electrical contacts encapsulated within a glass ampoule.

4,209,572

VENTED PLUG FOR STORAGE BATTERIES

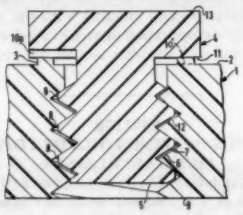
Martin-Ulrich Reissland, Gummersbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,737

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801198

Int. Cl.[2] H01M 2/12

U.S. Cl. 429—53 **9 Claims**



1. A vented plug for storage batteries, comprising a head with a threaded stem depending therefrom for threaded engagement with a threaded opening of a storage battery when the plug is in use, and a ventilation channel formed in the plug for establishing communication between the inside of an associated battery and the outside of the battery for venting gases generated inside the battery, the threads of said threaded stem including a portion shaped to provide a space defining said ventilation channel between the threaded stem and a threaded opening of an associated battery when the plug is in use, said space defined by said shaped threads also comprising a labyrinth passage for condensation of liquid from gas passing through the space toward the atmosphere.

4,209,573

SULFUR ELECTRODE CONTAINER AND METHODS OF MANUFACTURE

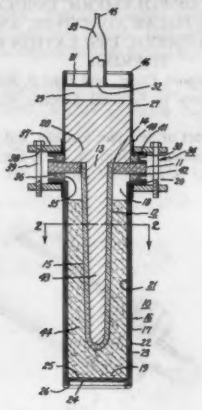
Debajyoti Chatterji, Latham, and Dong-Sil Park, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 10, 1978, Ser. No. 895,141

Int. Cl.[2] H01M 2/02

U.S. Cl. 429—104 **4 Claims**

1. A sulfur electrode container for use as a portion of a sodium-sulfur cell which comprises an outer metallic casing readily corroded by liquid sulfur, the outer casing having opposite open ends, a metallic liner in foil form with at least two full windings within the casing, the liner substantially corrosion resistant to liquid sulfur, the outer surface of the liner in substantially contiguous relation with respect to the inner surface of the outer casing, a metallic end cap adapted to fit and to be sealed within and adjacent one open end of the



casing, and at least the inner surface of the end cap substantially corrosion resistant to liquid sulfur.

4,209,574

LONG-LIFE ALKALINE PRIMARY CELL HAVING LOW WATER CONTENT

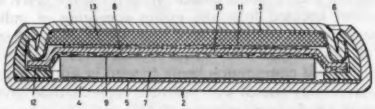
Paul Ruetschi, Yverdon, Switzerland, assignor to Leclanche S.A., Canton of Vaud, Switzerland

Filed Jul. 6, 1979, Ser. No. 55,336

Claims priority, application Switzerland, Jul. 6, 1978, 7353/78

Int. Cl.[2] H01M 6/04

U.S. Cl. 429—133 **6 Claims**



1. A long-life alkaline primary battery cell having a low water content, comprising a positive electrode of silver oxide or mercuric oxide, a negative electrode, and an alkali hydroxide electrolyte, wherein the water content of said cell as a whole does not exceed an amount represented by the formula

$$W=(n_{NaOH}f_{NaOH})+(n_{KOH}f_{KOH})+(n_{RbOH}f_{RbOH})$$

wherein

W = moles of water per cell

n_{NaOH} = moles NaOH per cell

n_{KOH} = moles KOH per cell

n_{RbOH} = moles RbOH per cell

f_{NaOH} = 2.0 to 2.7

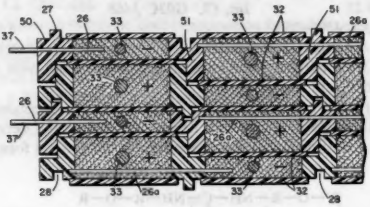
f_{KOH} = 2.4 to 3.1

f_{RbOH} = 2.8 to 4.0.

4,209,575
MULTI-CELL BATTERIES

William L. McDowall, Glen Waverley, and Alan K. Maplesden, Kew, both of Australia, assignors to Dunlop Australia Limited, Melbourne, Australia

Filed Nov. 28, 1978, Ser. No. 964,292
Claims priority, application Australia, Nov. 28, 1977, PD2588
Int. Cl.[2] H01M 4/78
U.S. Cl. 429—146 14 Claims



1. A multi-cell battery including a plurality of frames formed of a mouldable material which is electrically insulating at the intended operating voltage of the battery and is inert to the active materials of the battery and any material produced during operation of the battery, each frame defining a plurality of separate material receiving areas arranged in side by side relationship across the width of the frame, each frame including portions forming divisions between adjacent support areas of the frame, the frames being arranged in a side by side relationship in a direction normal to the width of the frame with the portions of each frame forming the divisions between adjacent receiving areas secured in a sealed relationship to the corresponding portions in adjacent frames to form partitions between adjacent cells of the battery, each alternate frame having an electrolyte porous separator member spanning each support area thereof and secured to the portions of the frame defining said support area, and individual masses of active battery material supported in each support area of the remaining frames so that each said area forms a plate of the battery, the active battery material in respective areas being selected so that adjacent areas in each frame form plates of opposite polarity and adjacent areas on opposite sides of each separator member form plates of opposite polarity, each said alternate frame having a plurality of spacer elements integral therewith, said spacer elements being arranged so that each spacer member has at least one spacer element extending partly across that surface of the separator member directed to the support area of an adjacent frame carrying active material of positive polarity.

4,209,576
ASSEMBLY OF A GROUP OF ELECTRODES AND A TERMINAL OF A STORAGE CELL

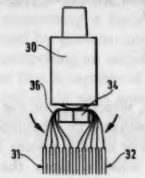
Jean-Louis Heurtel, Gradignan, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Feb. 2, 1979, Ser. No. 9,071
Claims priority, application France, Feb. 28, 1978, 78 05665
Int. Cl.[2] H01M 2/26
U.S. Cl. 429—161 10 Claims

1. An assembly of a plurality of electrodes and a terminal for a storage cell, wherein each electrode is in the form of a plate provided with a plate head and means for electrically connecting each plate head to the terminal, wherein the improvement comprises:

said plurality of electrodes being divided into two equal groups, each electrode in one of the groups being paired with an electrode in the other group and

said connecting means being a thin flexible metal tape connecting the plate head of each electrode in one of the groups with the plate head of its paired electrode in the other group, the metal tapes of the connected pairs of



electrode plates in the two groups being superposed and fixed to the terminal.

4,209,577
ALKALINE-MnO_2 CELL HAVING A ZINC POWDER-GEL ANODE CONTAINING METHYL CELLULOSE

David G. Clash, Fairview Park, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,313
Int. Cl.[2] H01M 6/06
U.S. Cl. 429—206 8 Claims

1. An alkaline cell employing a cathode, an aqueous alkaline electrolyte solution and a powder-gel anode comprising a major portion of a consumable anodic material, a minor amount of methyl cellulose, a minor amount of carboxylmethyl cellulose and an aqueous alkaline electrolyte solution.

4,209,578
GALVANIC CELL WITH ALKALINE ELECTROLYTE

Helmut Balters, Ellwangen, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,303
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757583
Int. Cl.[2] H01M 4/34
U.S. Cl. 429—206 5 Claims

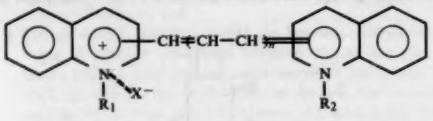
1. A galvanic cell having an alkaline electrolyte and a positive electrode and which contains Ag_2O as potential determining component, characterized in that the positive electrode is provided with a silver layer which is formed through a chemical reducing agent upon the electrode after it has already been built into the cell cup, the chemical reducing agent being applied to the separator.

4,209,579
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL WITH A QUINOCYANINE PIGMENT

Lyong S. Pu, and Hitoshi Kamoda, both of Minam' shigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,336
Claims priority, application Japan, Sep. 28, 1976, 51-115448
Int. Cl.[2] G03G 5/06, 5/14
U.S. Cl. 430—78 9 Claims

1. An electrophotographic photosensitive material comprising an electrically conductive support having thereon a photoconductive layer which consists essentially of an organic photoconductive material and a binder, in which the photoconductive layer contains in a dispersed state a photoconductive quinocyanine pigment having a particle size of about 5μ or less represented by the following general formula (I)



(I)

wherein R_1 and R_2, which may be the same or different, each represents an unsubstituted or substituted alkyl group having 1 to 12 carbon atoms or an allyl group; X represents an anionic functional group selected from the group consisting of R_3COO^-, $R_4SO_3^-$, $R_5SO_4^-$ and NO_3^-; R_3 represents an unsubstituted alkyl group having 1 to 5 carbon atoms, a substituted alkyl group having 1 to 5 carbon atoms in the alkyl moiety thereof, an unsubstituted or substituted phenyl group or a nitrogen-containing heterocylic group; R_4 represents an unsubstituted alkyl group having 1 to 4 carbon atoms or an unsubstituted or substituted phenyl or naphthyl group; R_5 represents a hydrogen atom or an unsubstituted alkyl group having 1 to 4 carbon atoms; and the two quinoline nuclei may contain additional substituents; and n is 0 or an integer of 1, 2 or 3.

4,209,580

SUBSTITUTED 1-PHENYL-3-PYRAZOLIDINONE ELECTRON TRANSFER AGENTS

Michael D. McCreary; William C. Farley, both of Rochester, and Wayne F. Erickson, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,063

Int. Cl.[2] G03C *7/00, 1/40, 1/176*

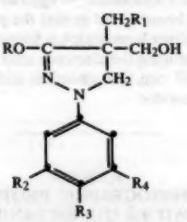
U.S. Cl. 430—218 **24 Claims**

1. In a photographic assemblage to be processed by an alkaline processing composition, said assemblage comprising:

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material comprising a ballasted, redox-dye-releasing compound capable of being oxidized by a silver halide electron transfer agent; and

(b) a dye image-receiving layer;

the improvement wherein said assemblage contains as said silver halide electron transfer agent or precursor thereof a compound having the following formula:



wherein:

R is hydrogen or a hydrolyzable moiety;

R_1 is hydrogen or a hydroxy group;

R_2, R_3 and R_4 each represent hydrogen, hydroxy, an alkyl group of 1 to 3 carbon atoms, an alkoxy group of 1 to 3 carbon atoms, a phenyl group, $—NHSO_2R_5$, $—O(CH_2)_nOR_6$, $—(CH_2)_nOR_6$, $—O(CH_2)_nC_6H_5$, $—(CH_2)_nR_7$ or $—O(CH_2)_nR_7$;

R_5 is hydrogen or an alkyl group of 1 to 3 carbon atoms;

R_6 is hydrogen or a methyl group;

R_7 is $NHSO_2R_5$ or SO_2NHR_5; and

n is a positive integer of 1 to 2; **with the proviso that at least one of said R_2, R_3 and R_4 must be one of said groups other than hydrogen.**

4,209,581

SOLUBLE PHOTOSENSITIVE RESIN COMPOSITION

Hiroshi Takanashi, Tokyo; Toshimi Aoyama, Yokohama, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 749,987, Dec. 13, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,341

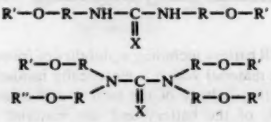
Int. Cl.[2] G03C *1/68*

U.S. Cl. 430—283 **6 Claims**

1. A soluble photosensitive resin composition comprising:

(A) 100 parts by weight of at least one soluble resin that is different from (B),

(B) 1–200 parts by weight of photocurable polycondensates of an alkylol derivative or an alkylated alkylol derivative of urea or thiourea represented by the general formula:



(I)

(II)

wherein X is oxygen or sulfur, R is an alkylene and R′ is hydrogen or alkyl, with a N-alkylol-acrylamide or N-alkylolmethacrylamide, the molar ratio of said urea component to said acrylamide component being within a range of 2:1–1:4, and

(C) 0.01–10 parts by weight of a photosensitizer.

4,209,582

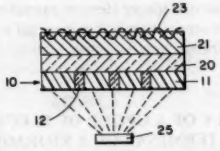
METHOD OF PREPARING SCREEN PRINTING STENCILS USING NOVEL COMPOUNDS AND COMPOSITIONS

Richard E. Merrill, Wakefield, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 770,272, Feb. 22, 1977, abandoned, Ser. No. 844,633, Oct. 25, 1977, abandoned, and Ser. No. 958,712, Nov. 8, 1978. This application Dec. 18, 1978, Ser. No. 970,196

Int. Cl.[2] G03C *5/00, 1/68*

U.S. Cl. 430—308 **36 Claims**



1. A method of preparing a screen printing stencil, characterized by the step of affixing to a printing screen a film configured to define a predetermined indicia pattern, said film comprising a UV-initiated cross-linking agent and a block copolymer, said block copolymer being formed of blocks of copolyacrylate and polyurethane, said copolyacrylate comprising a copolymer of a hydroxy-containing acrylate and a second acrylate component which comprises one or more esters of a non-hydroxy-containing acrylic acid or methacrylic acid or mixtures thereof, said film defining said indicia pattern being formed by applying said film to a support to form thereon a photoexposing and cross-linkable film, cross-linking said cross-linkable film in the areas corresponding to said desired indicia pattern and removing the noncross-linked film.

4,209,583
CORROSION PREVENTATIVE FOR TWO-BATH STABILIZER BATHS

Werner Berthold, Leverkusen; Artur Botta; Anita von König, both of Krefeld, and Christian Rasp, Cologne, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

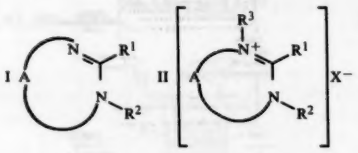
Filed May 1, 1978, Ser. No. 901,640

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720111

Int. Cl.² G03C *5/38*

U.S. Cl. 430—418 **12 Claims**

1. Aqueous stabilizer bath composition for stabilizing photographic materials containing developed silver in a silver halide emulsion, which bath composition contains a stabilizing agent selected from the group consisting of thiocyanate and thiosulfate, a hardener and a corrosion preventative, wherein the improvement comprises the corrosion preventative is a heterocyclic compound corresponding to one of the following formulae:



wherein

R^1 represents a straight chain or branched chain alkyl group with 1 to 11 C atoms which is substituted with an amino group, which amino group may be substituted by short chain alkyl groups, aryl, aralkyl or acyl;

R^2 represents hydrogen, alkyl with 1 to 6 C atoms, cycloalkyl, aralkyl or aryl, or

R^1 and R^2 represents the alkylene chain required for forming a 5-membered or 7-membered ring, which alkylene chain may be substituted by alkyl, cycloalkyl or aryl;

A represents the carbon atoms required for completing a 5-membered or 6-membered ring, which ring may carry a ring or rings condensed to the 5- or 6-membered ring;

R^3 represents a hydrogen atom or an alkyl, aralkyl or aryl group;

X represents a photographically inert anion.

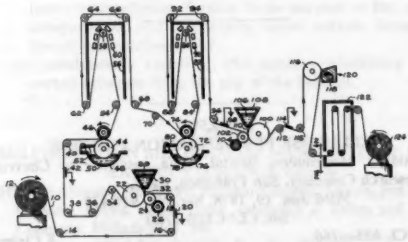
4,209,584
MANUFACTURE OF PHOTOGRAPHIC ELEMENTS HAVING ANTICURL AND ANTISTATIC LAYERS

Douglas C. Joseph, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1979, Ser. No. 49,002

Int. Cl.² G03C *1/78, 1/84*

U.S. Cl. 430—527 **32 Claims**



1. In a method for the manufacture of a photographic element comprising a support coated on one side with at least one image-forming layer and on the opposite side with separate contiguous anticurl and antistatic layers, the improvement wherein said anticurl and antistatic layers are coated on said support by a tandem gravure coating process in which said anticurl layer is formed by gravure coating of an anticurl coating composition comprising a hydrophilic colloid, said antistatic layer is formed by gravure coating of an antistatic coating composition comprising an antistatic agent and a diffusible hardening agent that is capable of acting as a hardener for the hydrophilic colloid in said anticurl layer, and said diffusible hardening agent diffuses from said antistatic layer into said anticurl layer to harden said hydrophilic colloid.

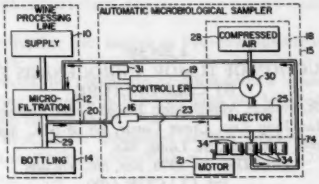
4,209,585
METHOD AND APPARATUS FOR THE AUTOMATIC MICROBIOLOGICAL SAMPLING OF A LIQUID PRODUCT

Harold L. Lloyd, 10654 Pioneer Ave., Oakdale, Calif. 95361; Richard A. Branscombe, 1629 Sheldon Dr., and Robert C. Oliver, 2409 Cheryl La., both of Modesto, Calif. 95350

Filed Jul. 14, 1978, Ser. No. 924,545

Int. Cl.² C12Q *1/24, 1/04;* C12M *1/36, 1/26*

U.S. Cl. 435—30 **32 Claims**



1. A method of automatically sampling for microorganisms in a liquid product flowing in a liquid product processing line, the method comprising the steps of:

directing a stream of liquid product away from the liquid product flowing in the processing line at a flow rate less than the flow rate in the processing line;

collecting microorganisms from the stream for consecutive time intervals;

sorting the microorganisms collected during said time intervals into groups, each of said groups corresponding to a respective time interval, such that the microorganisms in any of said groups are a generally representative sample of the microorganisms present in the liquid product flowing in the processing line during the respective time interval;

incubating said microorganisms collected from the stream; and

detecting said microorganisms collected from the stream.

4,209,586
METHOD OF TESTING THE EFFECTIVENESS OF A GROWTH INHIBITING AGENT ON A MICROORGANISM

Hans G. Nöller, 1512 Basswood Cir., Glenview, Ill. 60025

Filed Jul. 14, 1977, Ser. No. 815,658

Int. Cl.² C12Q *1/18;* C12M *1/34*

U.S. Cl. 435—32 **4 Claims**

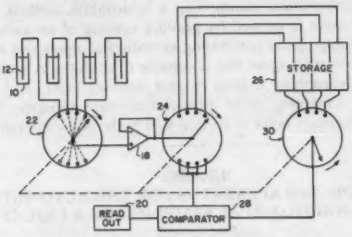
1. A method of testing the effectiveness of a growth inhibiting agent on a microorganism which comprises:

(a) introducing into a first batch of a nutrient medium an amount of the growth inhibiting agent to be tested;

(b) introducing into said first batch and into a second batch of said nutrient medium respective inocula of said microorganism, said second batch being free of said agent and capable of supporting growth of said microorganism at a predetermined temperature;

(c) incubating said first and second batches at said temperature;

(d) sensing the redox potentials of the incubated batches at a predetermined time after said inoculating while said redox potentials vary at approximately linear rates; and



(e) generating at least one sensible signal indicative of the difference between the sensed redox potentials as a measure of said effectiveness.

4,209,587

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,408
Int. Cl.[2] C12P *1/00*
U.S. Cl. 435—41 **6 Claims**

1. Process for the production of human TAF in vitro comprising growing the human liver adenocarcinoma cell line SK-HEP-1 in agitated, liquid suspension of nutrient culture medium at about 35°–38° C. for a sufficient time to elaborate TAF and recovering the resulting TAF from the cells or cell product.

4,209,588

PROCESS FOR PRODUCING NEW ANTITUMOR ANTHRACYCLINE ANTIBIOTICS

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Toshikazu Oki, Yokohama, and Taiji Inui, Chigasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 838,617, Oct. 3, 1977. This application Jul. 27, 1978, Ser. No. 928,637
Claims priority, application Japan, Oct. 5, 1976, 51-120237; May 24, 1977, 52-60908
Int. Cl.[2] C12P *19/56*
U.S. Cl. 435—78 **9 Claims**

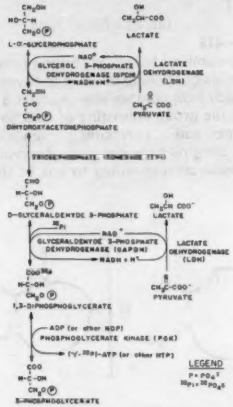
1. A process for producing MA 144-G1 which comprises cultivating a Streptomyces strain selected from the group consisting of *Streptomyces galilaeus* MA 144-M1 (FERM P-2445, ATCC 31133), *Streptomyces galilaeus* ATCC 14969, Streptomyces sp. ME 505-HE1 (FERM P-3667, ATCC 31273), *Streptomyces cinereoruber* ATCC 19740, *Streptomyces niveoruber* ATCC 14971, *Streptomyces antibioticus* ATCC 8663 and *Streptomyces purpurascens* ATCC 25489 in an aqueous nutrient medium under submerged aerobic conditions until a substantial amount of MA 144-G1 is produced by said organism in said culture medium and recovering the MA 144-G1 from the culture medium substantially free of substances coproduced therewith.

4,209,589

ENZYMATIC PROCESS FOR PREPARING [γ-^{32}P]-LABELED NUCLEOTIDES

Roger A. Johnson, and Timothy F. Walseth, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Jul. 13, 1978, Ser. No. 924,365
Int. Cl.[2] C12D *13/06*
U.S. Cl. 435—90 **16 Claims**



1. An enzymatic process for preparing gamma [^{32}P]-labeled nucleoside triphosphates comprising:

(a) forming a reaction mixture in aqueous solution containing as the primary reactants L-α-glycerophosphate (L-α-GP), [^{32}P]-phosphate ($^{32}P_i$), and a nucleoside diphosphate (NDP) selected from the class consisting of adenosine 5'diphosphate (ADP), 2'-deoxyadenosine 5'-diphosphate (dADP), guanosine 5'diphosphate (GDP), inosine 5'diphosphate (IDP), and adenyl 5'-yl-(α-β-methylene) diphosphate AP(CH$_2$)P;

(b) subjecting said primary reactants to enzymatic reactions in the presence of the conversion enzymes glycerol 3-phosphate dehydrogenase (GPDH), triosephosphate isomerose (TPI), glyceraldehyde 3-phosphate dehydrogenase (GAPDH), and 3-phosphoglycerate kinase (PGK); and

(c) also having present in said solution during said reactions nicotinamide adenine dinucleotide (NAD$^+$) together with pyruvate and lactate dehydrogenase (LDH) to reconvert the reduced form of nicotinamide adenine dinucleotide (NADH) to NAD$^+$.

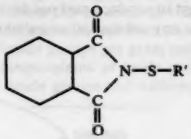
4,209,590

CELLULOSE FERMENTATION PROCESS

Donald L. MacFadden, Bristol, Tenn., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 19, 1978, Ser. No. 916,435
Int. Cl.[3] C12B *1/00*
U.S. Cl. 435—244 **6 Claims**

1. A method for accelerating the rate of in vitro cellulose fermentation by cellulose-digesting microorganisms which comprises conducting said fermentation in the presence of a rate-accelerating amount of a compound of the formula



wherein R′ is haloalkyl of 1 to 2 carbon atoms and 1 to 5 chloro or bromo groups and the carbocyclic ring has from 0 to 3 sites of olefinic unsaturation.

4,209,591

ENZYMATIC CONVERSION PROCESS

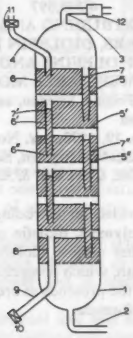
Petrus F. A. M. Hendriks, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Aug. 3, 1978, Ser. No. 930,860

Claims priority, application Netherlands, Aug. 19, 1977, 7709179

Int. Cl.² C12M *1/40*

U.S. Cl. 435—288 **5 Claims**



1. A continuous process for the enzymatic chemical conversion of a substrate solution by contacting the substrate solution with granular immobilized enzyme in an expanded or fluidized state, said process comprising:

(a) passing a substrate solution continuously in an upward direction through a single column reactor which is divided by horizontal partitions pervious to the substrate solution into at least three compartments, each compartment containing a fluidized bed of granular immobilized enzyme having a specific gravity greater than that of the substrate solution, said partitions being substantially impervious to the granular enzyme

(b) periodically passing said granular immobilized enzyme in a downward direction from each compartment to the next lower compartment, feeding fresh enzyme to the upper compartment and discharging spent enzyme from the lowest compartment, and

(c) continuously removing the solution containing converted substrate from the top of the column.

4,209,592

SULPHONATION METHOD FOR MANUFACTURE OF A CATION EXCHANGE RESIN

Hiroshi Akiyama, Ichikawa; Hiroshi Kuyama, Urawa, and Kohji Oinuma, Tokyo, all of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 2, 1978, Ser. No. 874,447

Int. Cl.² C08F *8/36*; B01D *15/04*

U.S. Cl. 521—33 **10 Claims**

1. A method for the manufacture of high-capacity, cation exchange resin beads having greater than about 95% unbroken beads which comprises contacting a crosslinked aromatic vinyl copolymer, in the form of beads, with sulfur trioxide in a liquid form obtained by dissolution of sulfur trioxide in a chlorinated hydrocarbon solvent until approximately one sulfonic acid group has been incorporated per aromatic nucleus in the beads, and recovering the sulfonated, crosslinked, aromatic vinyl copolymer cation exchange resin beads therefrom.

4,209,593

SEMI-FLEXIBLE SHOCK-ABSORBING POLYURETHANE FOAM PREPARED FROM A TRIOL, A COMPOUND HAVING A SINGLE REACTIVE HYDROGEN, AN AROMATIC POLYISOCYANATE, BLOWING AGENT, CHAIN-EXTENDER AND A CATALYST

Som N. Khanna, Guelph, Canada, assignor to Uniroyal Ltd., Ontario, Canada

Filed Nov. 15, 1978, Ser. No. 960,994

Claims priority, application Canada, Sep. 20, 1978, 311684

Int. Cl.² C08G *18/14*

U.S. Cl. 521—163 **19 Claims**

1. An impact-absorbing and energy-absorbing, semi-flexible, open-cell polyurethane foam capable of repeatedly absorbing shock without structural damage, comprising a reaction product of:

(a) a polyether triol having an hydroxyl number of from 25 to 115;

(b) a modifying compound which is soluble in said triol (a) having a single reactive hydrogen site, selected from the group consisting of:

(i) naphthalene substituted with a substituent selected from the group consisting of —OH, —COOH, —NH_2, and —SH;

(ii) anthracene substituted with a substituent selected from the group consisting of —OH, —COOH, —NH_2, and —SH;

(iii) phenanthrene substituted with a substituent selected from the group consisting of —OH, —COOH, —NH_2 and —SH;

(iv) hydroabietyl alcohol; and

(v) dehydroabietyl amine;

(c) an aromatic polyisocyanate reactive with (a) to form a polyurethane;

(d) at least one blowing agent selected from water and low boiling volatile organic liquid polyurethane blowing agents;

(e) at least one substance which is a polyurethane chain-extender or crosslinking agent having at least two reactive hydrogens; and

(f) a catalyst for polyurethane-forming reaction between the said triol (a) and the said polyisocyanate (c).

4,209,594

THERMOPLASTIC ELASTOMER BLENDS HAVING IMPROVED RESISTANCE TO OIL

David Welsh, Monroeville, and Ralph Milkovich, Murrysville, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Mar. 27, 1979, Ser. No. 24,343

Int. Cl.² C08L *51/00, 53/00*

U.S. Cl. 525—71 **4 Claims**

1. A thermoplastic elastomer composition comprising a blend of:

a. 5–95% by weight, based on total composition, of a block copolymer rubber of

A. 2–50% by weight, based on block rubber, of a monovinyl aromatic monomer, and

B. 50–98% by weight, based on block rubber, of a conjugated diene monomer wherein the block copolymer rubber is selected from the group consisting of A-B diblock rubbers, A-B graded diblock rubbers, A-B star or radial

block rubbers, A-B-A triblock rubbers, and A-B-A hydrogenated triblock rubbers wherein A represents a monovinyl aromatic monomer block, B represents a conjugated diene monomer block, and the B blocks represent 50–98% by weight of the total block copolymer rubber, and

b. 5–95% by weight, based on total composition, of a thermoplastic graft copolymer made by copolymerizing

A. 20–40% by weight, based on graft copolymer, of a macromolecular monomer consisting of polystyrene of number average molecular weight between 5,000 and 50,000 terminated with methacrylate groups, and

B. 60–80% by weight, based on graft copolymer, of one or more alkyl acrylates wherein said alkyl groups has 1–6 carbon atoms whereby the terminal methacrylate groups of component b.A. are addition copolymerized with the alkyl acrylate of component b.B. to produce a graft copolymer having pendant polystyrene groups.

4,209,595

COATING COMPOSITIONS INCLUDING HYDROXY FUNCTIONAL ACRYLIC ORGANOPHOSPHATE REACTIVE CATALYST

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1978, Ser. No. 973,325
Int. Cl.[2] C08L *63/00, 61/00*
U.S. Cl. 525—161 **10 Claims**

1. In a thermosetting coating composition comprising a film forming component and an amine aldehyde crosslinking agent, which composition cures by reaction between said amine aldehyde crosslinking agent and hydroxy functionality present on said film forming material, the improvement comprising including in said composition a hydroxy functional acrylic organophosphate reactive catalyst consisting essentially of the reaction product of:

(1) a hydroxy functional acrylic copolymer which (a) has a number average molecular weight (Mn) of between about 1500 and about 6000 and a glass transition temperature of between about −25° C. and about 70° C., and (b) bears between about 2 and about 10 pendent hydroxy groups per molecule; and

(2) sufficient phosphorus pentoxide to produce a reaction product having an acid equivalent weight of between about 500 and about 3000.

4,209,596

TWO STEP PROCESS FOR PRODUCING VULCANIZED RUBBER

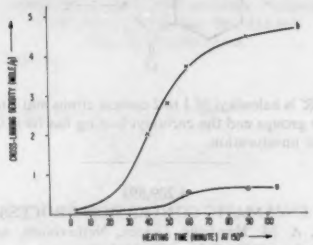
Kenjiro Hashimoto; Shinichi Takagi, both of Kobe; Harunori Okamoto, Sakai, and Minoru Miura, Nishinomiya, all of Japan, assignors to Mitsuboshi Belting, Ltd., Kobe, Japan

Continuation of Ser. No. 444,218, Feb. 20, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,143
Claims priority, application Japan, Apr. 28, 1973, 48-48789; Apr. 28, 1973, 48-48790
Int. Cl.[2] C08F *236/04, 236/22*
U.S. Cl. 525—333 **5 Claims**

1. A process for producing a vulcanized rubber which comprises the steps of:

(a) simultaneously incorporating sulfur and a sulfur cleaving agent selected from the group consisting of tertiary amines, secondary amines, primary amines, aliphatic polyamines, cyclic amines, thiazole-type accelerators, guanidine-type accelerators, thiourea-type accelerators, thiuram-type accelerators, dithiocarbamic acid-type accelerators, metal salts of said dithiocarbamic acid, xanthogenates, phosphines, phosphites and nucleophilic reagents containing a cyano group, in an ethylenepropylene terpolymer or a butyl rubber at a temperature of less than 60° C.;

(b) heating the resulting blend in the absence of a metal oxide at a temperature in excess of 60° C. to produce a substantially uncrosslinked pendant rubber, the amount of said sulfur cleaving agent and said time of heating the blend being sufficient to produce said pendant rubber but insufficient to cause any substantial crosslinking thereof; and



(c) heating the resulting substantially uncrosslinked pendant rubber in the presence of a metal oxide selected from the group consisting of ZnO, CdO, MgO, PbO, CaO and NiO to produce said vulcanized rubber.

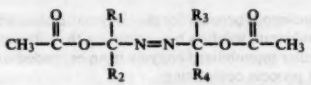
4,209,597

PROCESS FOR EXTRUDING AND CROSS-LINKING OLEFIN POLYMERS, DIOLEFIN POLYMERS, AND COPOLYMERS OF OLEFINS AND DIOLEFINS AND COPOLYMERIZABLE MONOMERS

Sven A. T. Bremholt, Fristad, Sweden, assignor to AB Gustavsberg, Fristad, Sweden

Filed Sep. 19, 1978, Ser. No. 943,897
Claims priority, application Sweden, Sep. 19, 1977, 7710448
Int. Cl.[2] C08F *8/30*
U.S. Cl. 525—376 **30 Claims**

1. A process is provided for extruding and cross-linking in shaped form olefin polymers, diolefin polymers and copolymers thereof with other olefins, diolefins, or monomers copolymerizable therewith, which comprises extruding the polymer in shaped form in the presence as cross-linking agent of an azo compound of the formula:



wherein R_1, R_2, R_3 and R_4 are alkyl having from one to about six carbon atoms, and then heating the extruded polymer in shaped form at a temperature within the range from about 175° C. to about 275° C. to effect cross-linking reaction between the polymer and the azo compound.

4,209,598

MODIFIED, WATER-DILUTABLE POLYMER OIL IMIDES CONTAINING CARBOXYL GROUPS

Hans-Peter Patzschke, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts, Wuppertal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 797,380, May 16, 1977, abandoned, which is a division of Ser. No. 636,368, Dec. 1, 1975, Pat. No. 4,051,198. This application Apr. 25, 1978, Ser. No. 899,853
Int. Cl.[2] C08F *8/30*
U.S. Cl. 525—333 **2 Claims**

1. An aqueous coating composition comprising a binder of a modified, water-dilutable olefin polymer oil imide resin having an olefin polymer oil portion in the molecular weight range of from about 500 to about 2500, comprising at least 40% by weight of 1,4-polybutadiene oil, wherein the imide resin has a viscosity of from about 300 to about 1500 m Pas as measured

on a 50% solution (weight/weight) in dibutyl glycol at 25° C. and contains from about 2.0 to about 3.5 milliequivalents of carboxyl groups per gram resin and from about 0.3 to about 2.0 milliequivalents of imide groups per gram resin and from about 10 to about 40 milliequivalents of imide groups for each 100 milliequivalents of imide groups and carboxyl groups.

4,209,599

CONTINUOUS MASS PREPARATION OF POLYMERS

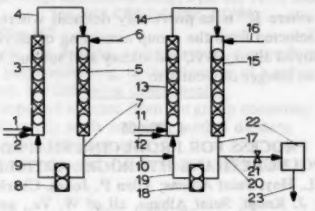
John W. Brady, Hoek van Holland; Pieter Eijsberg, Geleen, and Johan D. Logemann, Hoek van Holland, all of Netherlands, assignors to Synres International B.V., Hoek van Holland, Netherlands

Filed Jan. 13, 1978, Ser. No. 870,230

Claims priority, application Netherlands, Jan. 15, 1977, 7700412

Int. Cl.² C08F 4/32, 20/06

U.S. Cl. 526—64 **13 Claims**



1. A continuous mass polymerization process for the polymerization of at least one olefinically unsaturated monomer in the presence of at least one polymerization initiator to effect a degree of conversion of at least about 75%, comprising the steps of:

(A) Feeding to a tubular reactor which is provided with internal static mixing elements at least one olefinically unsaturated monomer and at least one polymerization initiator,

(B) heating said monomer and said initiator to a predetermined temperature ranging between the melting point of the polymer to be formed and about 300° C. while maintaining the pressure of said tubular reactor between about 2 atmospheres absolute and about 100 atmospheres absolute, to form a reaction mass,

(C) discharging from said tubular reactor said reaction mass formed in step B,

(D) recirculating between about 50% by weight to about 95% by weight of said discharged reaction mass of step C back to said tubular reactor as feed, so that said monomer and initiator of step A and the recycled portion of the discharged reaction mass are brought in contact essentially in said reactor.

4,209,600

PROCESS FOR POLYMERIZING, IN AQUEOUS SUSPENSION, HALOGEN-CONTAINING VINYL MONOMERS IN THE PRESENCE OF A CRUST FORMATION INHIBITOR

Daniel Tytgat, Brussels; Stephane Noël, Grimbergen, and Lucien Clerbois, Vilvoorde, all of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Dec. 1, 1977, Ser. No. 856,736

Claims priority, application Luxembourg, Dec. 1, 1976, 76309

Int. Cl.² C08F 14/06

U.S. Cl. 526—74 **15 Claims**

1. Process for the manufacturing of polymers containing in their molecule at least 50 mol% of halogen-containing vinyl monomer units by polymerizing in a reactor containing a polymerization mixture, and in aqueous suspension, a halogen-containing vinyl monomer, using an oil soluble initiator which generates free radicals, in the presence of an effective amount of an inhibitor of crust formation wherein the inhibitor of crust formation consists of arylsulfonic acid anions selected from naphthalenesulfonic acid anions, xylenesulfonic acid anions and aminoanilinoaminobenzenesulfonic acid anions, said anions being present in a quantity of less than 50 ppm relative to the water.

4,209,601

PROCESS FOR THE PRODUCTION OF POLYOLEFINS

Nobuyuki Kuroda, Yokohama; Takeichi Shiraishi, Kawasaki; Akio Itoh, Yokosuka; Kazuo Matsuura, Kawasaki, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 646,898, Jan. 6, 1976, abandoned. This application Mar. 16, 1978, Ser. No. 887,008

Claims priority, application Japan, Jan. 10, 1975, 50/5015; Jan. 24, 1975, 50/9699

Int. Cl.² C08F 4/02, 10/02

U.S. Cl. 526—114 **3 Claims**

1. Process for the polymerization of ethylene in the presence of solvent to provide solid particles of polyethylene present in said solvent, said polymerization being carried out in the presence of a catalyst consisting essentially of a solid component containing a titanium compound and/or a vanadium compound and an organometallic compound selected from the group consisting of organoaluminum compounds and organozinc compounds, said solid component being obtained by copulverizing (1) a metal halide selected from the group consisting of magnesium chloride, magnesium bromide, magnesium iodide and manganese chloride, (2) an organoboron compound selected from the group consisting of $B(OCH_3)_3$, $B(OC_2H_5)_3$, $B(On—C_3H_7)_3$, $B(Oi—C_3H_7)_3$, $B(On—C_4H_9)_3$, $B(Ot—C_4H_9)_3$, $B(OC_6H_5)_3$, $B(OCH_3)_2Cl$, $B(OC_2H_5)_2Cl$, $B(Oi—C_3H_7)_2Cl$ and $B(Ot—C_4H_9)_2Cl$, the ratio of the metal halide to the organoboron compound being in the range from 1:0.5 to 1:0.1, and (3) a titanium compound and/or a vanadium compound, the copulverization of the metal halide, organoboron compound and titanium compound and/or vanadium compound being carried out at a temperature between 0° C. and 200°C. for a period from 0.5 to 50 hours in an inert gas atmosphere, and the titanium and/or vanadium content in the resulting solid being in the range of from 0.5 to 20 percent by weight.

4,209,602

PROCESS FOR THE PRODUCTION OF POLYOLEFINS

Nobuyuki Kuroda, Yokohama; Takeichi Shiraishi, Kawasaki; Akio Itoh, Yokosuka; Kazuo Matsuura, Kawasaki, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 646,898, Jan. 6, 1976, abandoned. This application Mar. 16, 1978, Ser. No. 887,009

Claims priority, application Japan, Jan. 10, 1975, 50-5015; Jan. 24, 1975, 50-9699

Int. Cl.² C08F 4/02, 10/02

U.S. Cl. 526—114 **3 Claims**

1. Process for the polymerization of ethylene in the presence of solvent to provide solid particles of polyethylene present in said solvent, said polymerization being carried out in the presence of a catalyst consisting essentially of a solid component containing a titanium compound and/or a vanadium compound and an organometallic compound selected from the group consisting of organoaluminum compounds and organozinc compounds, said solid component being obtained by copulverizing (1) a metal halide selected from the group consisting of magnesium chloride, magnesium bromide, magnesium iodide and manganese chloride, (2) an organomagnesium compound selected from the group consisting of $Mg(OCH_3)_2$, $Mg(OC_2H_5)_2$, $Mg(On—C_3H_7)_2$, $Mg(Oi—C_3H_7)_2$, $Mg(On—C_4H_9)_2$, $Mg(Ot—C_4H_9)_2$, $Mg(OC_6H_5)_2$, $Mg(OCH_3)Cl$, $Mg(OC_2H_5)Cl$, $Mg(Oi—C_3H_7)Cl$, $Mg(Ot—C_4H_9)Cl$ and $Mg(OC_6H_5)Cl$, the ratio of the metal halide to the organomagnesium compound being in the range from 1:0.5 to 1:0.01, and

(3) a titanium compound and/or a vanadium compound, the copulverization of the metal halide, organomagnesium compound and titanium compound and/or vanadium compound being carried out at a temperature between 0° C. and 200° C. for a period from 0.5 to 50 hours in an inert gas atmosphere, and the titanium and/or vanadium content in the resulting solid being in the range of from 0.5 to 20 percent by weight.

4,209,603

CATALYST ON A SUPPORT FOR THE POLYMERIZATION OF α-ALKENES, PARTICULARLY ETHENE

Lambertus J. M. A. van de Leemput, Gw Echt, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 13, 1978, Ser. No. 924,435

Claims priority, application Netherlands, Jul. 18, 1977, 7707958; Jul. 18, 1977, 7707959

The portion of the term of this patent subsequent to Mar. 27, 1996, has been disclaimed.

Int. Cl.[2] C08F *4/02, 10/02*

U.S. Cl. 526—129 **5 Claims**

1. In processes for polymerizing an α-alkene containing from 2 to 8 carbon atoms, together with a minor quantity of at most 10 mole % of one or more other α-alkene co-monomers containing from 2 to 8 carbon atoms, the improvement consisting essentially in using a catalyst obtained by reacting a chromium-1,3-diketo compound of the formula

$$Cr(OCR_1CR_2CR_3O)_3$$

in which R_1, R_2, R_3 each independently represent an alkyl group containing from 1 to 10 carbon atoms, and R_2 may also represent a hydrogen atom,

with an organometallic compound of a metal from Group II or III of the Periodic Table in a hydrocarbon or halogenated hydrocarbon solvent,

wherein hydrocarbyl groups containing from 1 to 20 carbon atoms are bound to the metal atom via a carbon atom,

subsequently contacting the resulting hydrocarbon or halogenated hydrocarbon soluble reaction product with an inert inorganic support material,

composed of silica having a pore volume of at least 1.5 cm^3/g and a sodium content of at most 200 ppm,

next heating the reaction product of the chromium compound deposited on the said silica support at a temperature of between about 200° and 1200° C. in a non-reducing atmosphere, and thereafter combining the resulting product with an organometallic compound of an element from Group II or III of the Periodic Table.

4,209,604

ANAEROBIC MONOMERS AND ADHESIVES

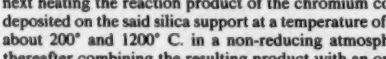
Gerhardt P. Werber, Naperville, Ill., assignor to Estech Specialty Chemicals Corporation, Chicago, Ill.

Filed Jan. 7, 1976, Ser. No. 647,217

Int. Cl.[2] C08F *24/00, 224/00, 2/00, 120/00*

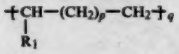
U.S. Cl. 526—270 **6 Claims**

1. An acrylic monomer having the general formula:

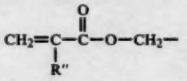


wherein A is

where R″ is a member selected from the group consisting of hydrogen, chlorine, methyl and ethyl radicals, and where R_2 is an unsaturated divalent alkyl or substituted alkyl group of from 2–4 carbon atoms or an unsaturated divalent carbocyclic aliphatic ring of from 4–9 carbon atoms, and where X is a member selected from the group consisting of —O—, —NH—, and —NR′— where R′ is a benzyl radical or an alkyl group of from 1–4 carbon atoms, and where R is



where p is an integer of from 0 to 2, q is an integer of from 1 to 3 R_1 is a member selected from the group consisting of hydrogen, methyl, ethyl, chloromethyl, methylol, phenyl, methoxyphenyl, methoxybutyl, methoxyallyl and



radicals where R″ is as previously defined; wherein R_4 is a member selected from the group consisting of alkylidene oxy aryl, methylol alkoxy aryl, and alkoxy aryl sulfone; n is 0 or 1; and u is an integer of from 1 to 5.

4,209,605

PROCESS FOR PRODUCING SHAPED POLYURETHANE HYDROGEL ARTICLES

Kenneth L. Hoy, Saint Albans; Allen P. Jones, Charleston, and Robert J. Knopf, Saint Albans, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,730

Int. Cl.[2] C08G *18/24, 18/18, 18/48, 18/32*

U.S. Cl. 528—54 **7 Claims**

1. A continuous, solventless process for producing water swellable, lightly crosslinked, hydrogel polymer comprising the steps of:

(a) preparing a plurality of at least two feed compositions consisting of poly(oxyalkylene)polyol, organic polyisocyanate and catalyst, with the provisos that the catalyst is not in the same composition in which both of the poly(oxyalkylene)polyol and organic polyisocyanate are present and that the feed compositions are devoid of organic solvents,

(b) feeding metered amounts of each of the feed compositions continuously through at least one in-line mixer to achieve uniform, homogeneous mixture,

(c) continuously feeding the said uniform, homogeneous mixture into the inlet end and through tubular reactor means and producing an isocyanato terminated prepolymer of high specific viscosity,

(d) extruding the said isocyanato terminated prepolymer through appropriate dies at the exit of said tubular reactor to form a shaped article,

(e) lightly crosslinking said shaped article as it exits said tubular reactor with an equivalent amount of a crosslinking agent of the group water or organic polyamine; and

(f) recovering the shaped polyurethane hydrogel polymer article produced; wherein said isocyanato terminated prepolymer comprises the reaction product of:

(i) a poly(oxyalkylene) polyol having an average molecular weight up to about 25,000, wherein the alkyleneoxy group contains from 2 to 4 carbon atoms, and

(ii) an organic polyisocyanate, and, further, wherein said poly(alkyleneoxy) polyol is a mixture of a major amount of poly(ethyleneoxy)diol having an average molecular weight of from about 4,000 to about 25,000 and a minor amount of poly(alkyleneoxy) triol or poly(alkyleneoxy) tetrol or aliphatic polyhydroxyl compound of the formula $C_nH_{2n+2-m}(OH)_m$ wherein n has a value of 3 to 6 and m has a value of 3 to 4, or mixtures thereof, said triol or tetrol having an average molecular weight of

from about 92 to 5,000, wherein the mole ratio of diol to higher polyol in said mixture is from about 6:1 to 40:1; and wherein the equivalents ratio of isocyanato groups to hydroxyl groups is from about 1.05:1 to about 2:1; and wherein said polyamine is a primary or secondary diamine or triamine and wherein the equivalents of reactive crosslinking groups in said crosslinking agent used is equivalent to the number of equivalents of isocyanato groups present in said prepolymer.

4,209,606
SELF-EXTINGUISHING AND THERMOSTABLE COPOLYESTERS AND PROCESS FOR MAKING THE SAME

Aldemaro Ciaperoni, Bollate; Giuseppe Quaglia, S. Giorgio su Legnano, and Gino Dall'Asta, Milan, all of Italy, assignors to SNIA VISCOSA Societa Nazionale Industrial Applicazioni Viscosa S.p.A, Milan, Italy

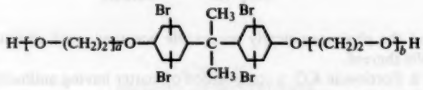
Filed Feb. 15, 1978, Ser. No. 878,168
Claims priority, application Italy, Feb. 15, 1977, 20278 A/77
Int. Cl.² C08G 63/66, 63/68
U.S. Cl. 528—167 **19 Claims**

1. Process for making a copolyester composition which comprises polycondensing, in the presence of a polycondensation catalyst, the following components:

(A) a compound selected from the group consisting of dicarboxylic arylic acids and their methyl diesters;

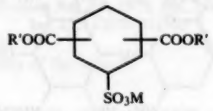
(B) a saturated aliphatic diol;

(C) a tetrabrominated diol having the formula (1)



wherein a and b are, independently of one another, 1 or 2;

(D) a compound having the formula (2)



wherein R' is selected from the group consisting of hydrogen, alkyl containing from 1 to 3 carbon atoms and hydroxyalkyl containing 2 or 3 carbon atoms, and M is an alkali metal; and

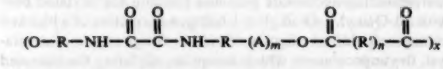
(E) a positive amount of up to 1% by weight of a phosphor derivative selected from the group consisting of organic and inorganic derivatives of trivalent or pentavalent phosphor, as complexing and stabilizing agent.

4,209,607
POLYESTERAMIDES DERIVED FROM BIS-OXAMIDODIOLS AND DICARBOXYLIC ACIDS

Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed May 12, 1978, Ser. No. 905,325
Int. Cl.² C08G 63/16
U.S. Cl. 528—291 **15 Claims**

1. Alternating esteramide polymer having repeating units represented by



wherein R is a divalent aliphatic or aromatic hydrocarbon radical having from 3 to about 8 carbon atoms, R' is a divalent hydrocarbon radical having from 1 to about 8 carbon atoms, A is a divalent oxyalkylene radical having from 4 to 8 carbon atoms, m is 0 or 1, n is 0 or 1, and x is the degree of polymerization resulting in a film-forming or fiber-forming polymer.

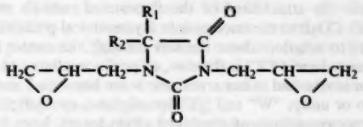
4,209,608
ADDUCTS CONTAINING EPOXIDE GROUPS, FROM HYDANTOIN POLYEPOXIDE AND BINUCLEAR HYDANTOIN COMPOUNDS

John H. Bateman, Bardonia, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,150
Int. Cl.² C08G 59/02, 59/26
U.S. Cl. 528—363 **8 Claims**

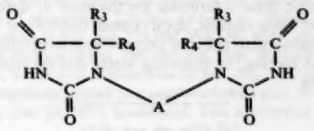
1. An advanced addition product containing 1,2-epoxide groups, which is obtained by heating a mixture of

(a) a hydantoin diglycidyl compound of the formula



wherein R_1 is hydrogen, alkyl containing 1 to 8 carbon atoms or cycloalkyl containing 5 to 6 carbon atoms, and R_2 is alkyl containing 5 to 8 carbon atoms or cycloalkyl containing 5 to 6 carbon atoms.

(b) less than 1 equivalent of NH groups per epoxide group of diglycidyl compound (a) of a binuclear bis-hydantoin compound of the formula



wherein R_3 and R_4 are selected from the group consisting of hydrogen or alkyl of 1 to 4 carbon atoms; or together R_3 and R_4 from tetramethylene or pentamethylene, and A is a member selected from the group consisting of alkylene, alkylidene or alkylidene substituted by one or more halogen atoms.

4,209,609
TOLUENE DIAMINE INITIATED POLYETHER POLYOLS

James L. Haas, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 849,196, Nov. 7, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,259
Int. Cl.² C08L 71/02
U.S. Cl. 528—421 **10 Claims**

1. A polyol comprising the adduct obtained by sequentially reacting toluene diamine with from 3 to 5 moles of ethylene oxide and then with from 1 to 5.1 moles of a vicinal alkylene oxide of from 3 to 9 carbon atoms, the total number of moles of ethylene oxide plus vicinal alkylene oxide being at least five and no more than 8.1.

4,209,610

PARTIALLY FLUORINATED ESTERS OR AMIDE/ESTERS OF BENZENE POLYCARBOXYLIC ACIDS, AND DYEABLE PET AND NYLON FIBERS INCORPORATING THE SAME AND PROCESS OF MAKING SUCH FIBERS

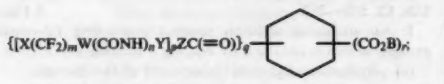
Frank Mares, 32 Valley Forge Dr., Whippany, N.J. 07981; Bryce C. Oxenrider, 41 Circle Rd., Florham Park, N.J. 07932; Cyril Woolf, deceased, late of Morristown, N.J., and by Helga Woolf, executrix, 104 James St., Morristown, N.J. 07960

Continuation-in-part of Ser. No. 677,357, Apr. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,929, Jun. 30, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,372

Int. Cl.[2] C08G *63/12, 69/44;* C11C *3/00*

U.S. Cl. 260—40 R 15 Claims

1. A compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO_2B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; $(CF_2)_m$ and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1, or "Z" is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH_2RCHOH or is $CH_2RCHOCH_2RCHOH$ where "R" is hydrogen or methyl, or "B" is $CH_2CH(OH)CH_2Q$ where Q is halogen, hydroxy, or nitrile; or "B" is $CH_2CH(OH)CH_2OCH_2CH(OH)CH_2Q$; and r is an integer of at least 1 but not greater than q; and $X(CF_2)_m$, W and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the active general formulas are the same or different; said compound being capable, upon contact thereof—as a solution or dispersion—with fibers of polyethylene terephthalate or of nylon and heating, of imparting water and oil repellency to such fibers.

4,209,611

DIHYDROSTEFFIMYCIN COMPOUNDS

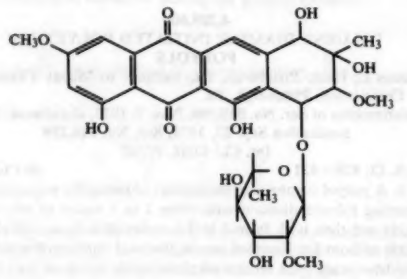
Vincent P. Marshall; David W. Elrod, and Paul F. Wiley, all of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 6, 1979, Ser. No. 27,878

Int. Cl.[2] C07H *15/24*

U.S. Cl. 536—17 A 8 Claims

1. 10-Dihydrosteffimycin, a compound having the following structure:



and alkali and alkaline earth metal salts thereof.

4,209,612

FORTIMICIN FACTORS KF AND KG AND PROCESS FOR PRODUCTION THEREOF

Keiichi Takahashi, Machida; Takao Iida, Tokyo; Kunikatsu Shirahata, Machida; Masahiro Sugimoto; Shinzo Ishii, both of Shizuoka; Ryo Okachi, and Takashi Nara, both of Tokyo, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

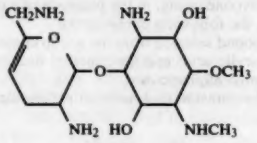
Filed Nov. 6, 1978, Ser. No. 957,845

Claims priority, application Japan, Nov. 7, 1977, 52-133305

Int. Cl.[2] C07H *15/22*

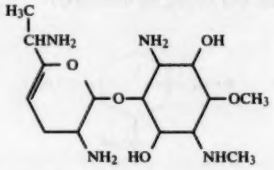
U.S. Cl. 536—17 R 2 Claims

1. Fortimicin KF, a composition of matter having antibacterial activity and having the structural formula



and the pharmaceutically acceptable non-toxic acid addition salts thereof.

2. Fortimicin KG, a composition of matter having antibacterial activity and having the structural formula



and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,209,613

PROCESS FOR THE PREPARATION OF NUCLEOSIDES

Helmut Vorbruggen, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,583

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2757365

Int. Cl.[2] C07H *17/00*

U.S. Cl. 536—23 11 Claims

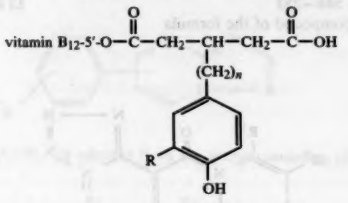
1. In a process for preparing a nucleoside by silylating the corresponding nucleoside base and reacting the silylated base with a 1-O-acyl, 1-O-alkyl or 1-halogen derivative of a blocked monosaccharide or oligosaccharide in the presence of a catalyst, the improvement which comprises silylating the base and reacting the sugar derivative in a single step.

4,209,614
VITAMIN B_{12} DERIVATIVE SUITABLE FOR RADIOLABELING

Jack Bernstein, New Brunswick; Ravi K. Varma, Belle Mead, both of N.J.; B. Richard Vogt, Yardley, Pa., and Frank L. Weisenborn, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 30, 1978, Ser. No. 910,568
Int. Cl.[2] A61K *31/68;* C07H *23/00*
U.S. Cl. 536—25 11 Claims

1. A vitamin B_{12} derivative having the formula



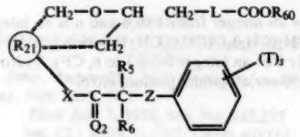
wherein R is hydrogen or an alkyl group of 1 to 3 carbon atoms and n is 0, 1, 2, 3 or 4.

4,209,615
PHENYL-SUBSTITUTED 9-DEOXY-6,9α-EPOXYMETHANO-PG ANALOGS

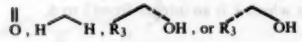
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 788,145, Apr. 19, 1977, Pat. No. 4,130,569. This application Sep. 11, 1978, Ser. No. 941,510
Int. Cl.[2] C07D *311/02*
U.S. Cl. 542—426 16 Claims

1. A cyclic ether of the formula



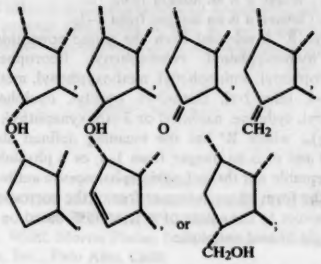
wherein L is (1) a valence bond, (2) $-(CH_2)_d-$ wherein d is one to 5 inclusive, (3) $-(CH_2)_t-CF_2-$ wherein t is 2, 3, or 4, (4) $-CH_2-CH=CH-A-$ wherein A is a valence bond or $-(CH_2)_h-$ wherein h is one, 2, or 3, or (5) $-CH_2-O-CH_2-Y-$ wherein Y is a valence bond or $-(CH_2)_k-$ wherein k is one or 2; wherein Q_2 is



wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);

wherein (R_{21}) is



wherein R_{60} is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, or (c) a pharmacologically acceptable cation;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein X is cis— or trans—CH=CH—, —C≡C— or $—CH_2CH_2—$; wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms inclusive between $—CR_5R_6—$ and the phenyl ring;

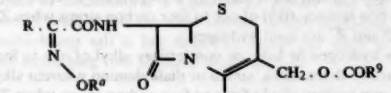
and wherein the wavy line (~) indicates attachment in cis or trans configuration.

4,209,616
SYN ISOMERS OF CEPHALOSPORINS HAVING α-HYDROXIMINO- OR α-ACYLOXYIMINOACYLAMIDO GROUPS AT POSITION-7

Michael Gregson, London; Martin C. Cook, and Gordon I. Gregory, both of Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Continuation of Ser. No. 771,807, Feb. 24, 1977, abandoned, which is a division of Ser. No. 554,014, Feb. 28, 1975, Pat. No. 4,024,134, which is a continuation of Ser. No. 274,602, Jul. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 221,057, Jan. 26, 1972, abandoned. This application Oct. 16, 1978, Ser. No. 951,761
Claims priority, application United Kingdom, Jan. 29, 1971, 3531/71; Oct. 1, 1971, 45885/71
Int. Cl.[2] C07D *501/20*
U.S. Cl. 544—28 25 Claims

1. A cephalosporin antibiotic of the formula



wherein R is phenyl, naphthyl, thienyl, furyl, pyridyl, or phenyl substituted by chloro;

R^a is H or

wherein R^c is C_{1-4} alkyl, C_{1-4} chloroalkyl, C_{1-4} alkoxy, phenyl, nitrophenyl, C_{1-4} alkylamino or C_{1-4} chloroalkylamino; and

R^9 is

(a) C_nH_{2n+1} where n is an integer from 1–7;
(b) C_nH_{2n-1} where n is an integer from 2–7;
(c) R^v where R^v is selected from the group consisting of phenyl, hydroxyphenyl, chlorophenyl, fluorophenyl, tolyl, nitrophenyl, aminophenyl, methoxyphenyl, methylthiophenyl, thien-2-yl, thien-3-yl, pyridyl, cyclohexyl, cyclopentyl, sydnone, naphthyl or 2-ethoxynaphthyl; or
(d) $R^v(CH_2)_m$ where R^v has the meaning defined above under (c) and m is an integer from 1–4; or a physiologically acceptable salt thereof, said cephalosporin antibiotic being in the form of a syn-isomer free of the corresponding anti-isomer to the extent of at least 75% based on the total weight of said antibiotic.

4,209,617

6,7-DIHYDRO-8H-PYRROLO[2,1-C][1,4]THIAZINE-1(8AH),4(3H)-DIONE

Ralph L. White, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,889
Int. Cl.² C07D *513/04*
U.S. Cl. 544—47 **1 Claim**

1. The compound 6,7-dihydro-8-pyrrolo[2,1-c] [1,4]thiazine-1(8aH), 4(3H)-dione.

4,209,618

MORPHOLINODIPHENYLPHTHALIDES

Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 740,592, Nov. 10, 1976, Pat. No. 4,094,877, which is a continuation-in-part of Ser. No. 527,757, Nov. 27, 1974, Pat. No. 4,032,527, which is a continuation-in-part of Ser. No. 314,443, Dec. 12, 1972, Pat. No. 4,096,176. This application Apr. 10, 1978, Ser. No. 894,682
Int. Cl.² C07D *413/10*
U.S. Cl. 544—153 **4 Claims**

1. 3-(2-X-4-X-Phenyl)-3-(2-Y^2-4-phenyl)-4-Z^4-5-Z^5-6-Z^6-7-Z^7-phthalide wherein:
X is dialkylamino wherein alkyl is non-tertiary alkyl of one to four carbon atoms;
Y^2 is hydrogen, non-tertiary alkyl of one to four carbon atoms, alkanoylamino of two to five carbon atoms, non-tertiary alkoxy of one to four carbon atoms or halo;
Y^4 is morpholino;
Z^4 is hydrogen or halo;
Z^5 is hydrogen or halo; or non-tertiary alkyl of one to four carbon atoms, nitro, amino or dialkylamino wherein alkyl is non-tertiary alkyl of one to four carbon atoms when Z^4, Z^6 and Z^7 are each hydrogen;
Z^6 is hydrogen or halo; or non-tertiary alkyl of one to four carbon atoms, nitro, amino or dialkylamino wherein alkyl is non-tertiary alkyl of one to four carbon atoms when Z^4, Z^5 and Z^7 are each hydrogen; and
Z^7 is hydrogen or halo.

4,209,619

HERBICIDAL COMPLEX AND FORMULATION

Robert E. Albert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 22, 1978, Ser. No. 917,938
Int. Cl.² C07D *251/46*; A01N *9/22*
U.S. Cl. 544—211 **1 Claim**

1. A hexazinone/urea complex in a molar ratio of 1:3.

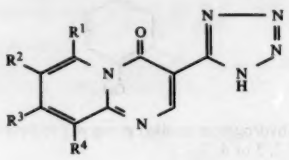
4,209,620

SUBSTITUTED 3-(1H-TETRAZOL-5-YL)-4H-PYRIDO[1,2-A]PYRIMIDIN-4-ONE DERIVATIVES HAVING ANTIALLERGY ACTIVITY

Peter F. Juby, Jamesville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

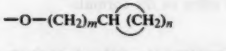
Continuation-in-part of Ser. No. 916,440, Jun. 19, 1978, abandoned, which is a division of Ser. No. 800,264, May 25, 1977, Pat. No. 4,122,274. This application Oct. 16, 1978, Ser. No. 951,437
Int. Cl.² A61K *31/505*; C07D *239/70, 491/04*
U.S. Cl. 544—252 **13 Claims**

1. A compound of the formula

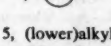


wherein R^2 and R^3 or R^3 and R^4 when taken together are methylenedioxy or

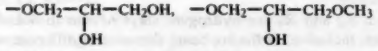
in which n is 3, 4 or 5 and the remaining available R^1, R^2 and R^4 substituents are each independently hydrogen, halogen, (lower)alkyl, (lower)alkoxy, (lower)alkoxy-(lower)alkyl, [—O—(lower)alkenyl,



in which m is 0 or an integer from 1 to 6 and n is an integer from 2 to 7, $—OCH_2(CH_2)_xO(CH_2)_yCH_3$ in which x and y are each independently 0 or an integer from 1 to 6, CF_3, hydroxy, hydroxymethyl,] (lower)alkylthio, [amino, nitro,



in which r is 4 or 5, (lower)alkylamino,] or di(lower)alkylamino, [carboxyl, $—CO_2—$(lower)alkyl, phenyl, phenyl substituted by one or two (lower)alkyl, (lower)alkoxy or halogen radicals, benzyl, (lower)alkylsulfinyl, $R^c—CO—$ in which R^c is (lower)alkyl, $R^c—COO—$ in which R^c is (lower)alkyl, $—O(CH_2)_kOH$ in which k is an integer from 2 to 6,



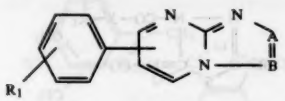
or $—OCH_2C_6H_5$,] with the proviso that R^1 and R^2 may not both be tertiary alkyl or tertiary alkoxy groups, or a pharmaceutically acceptable salt thereof.

4,209,621
(SUBSTITUTED-PHENYL)-1,2,4-TRIAZOLO[4,3-A]-PYRIMIDINES AND (SUBSTITUTED-PHENYL)-1,2,4-TRIAZOLO[1,5-A]PYRIMIDINES

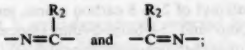
John P. Dusza, Nanuet, N.Y.; Robert A. Hardy, Jr., Ridgewood, N.J., and Jay D. Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 27, 1979, Ser. No. 34,060
Int. Cl.[2] A61K *31/505;* C07D *487/04*
U.S. Cl. 544—263 16 Claims

1. A compound consisting of the formula:



wherein —A=B— is selected from the group consisting of



R_1 selected from the group consisting of chloro, fluoro, trifluoromethyl, lower alkoxy (C_1–C_3) and R_2 is selected from the group consisting of hydrogen and lower alkyl (C_1–C_3).

4,209,622
3-(ETHOXYCARBONYL-METHYL)-6-METHYL-4-OXO-6,7,8,9-TETRAHYDRO-4H-PYRIDO[1,2-A]PYRIMIDINE

Zoltan Mészáros; József Knoll; István Hermecz; Lelle Vasvári, and Ágnes Horváth, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 452,275, Mar. 18, 1974, abandoned. This application Mar. 19, 1975, Ser. No. 559,916
Claims priority, application Hungary, Mar. 30, 1973, GI 1361
Int. Cl.[2] A61K *31/505;* C07D *487/04*
U.S. Cl. 544—282 1 Claim

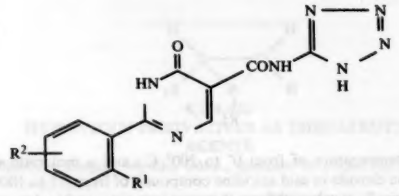
1. 3-(ethoxycarbonyl-methyl-6-methyl-4-oxo-6,7,8,9-tetrahydro-4H-pyrido-(1,2a)-pyrimidine.

4,209,623
PYRIMIDINE-5-N-(1H-TETRAZOL-5-yl)-CARBOXAMIDES

Peter F. Juby, Jamesville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,277
Int. Cl.[2] A61K *31/505;* C07D *403/12*
U.S. Cl. 544—319 27 Claims

1. A compound having the formula



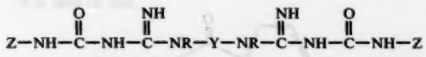
wherein R^1 and R^2 which may be the same or different are each hydrogen, halogen, (lower)alkyl, (lower)-alkoxy, —O—(lower)alkenyl, —O—(lower)alkynyl, —O—$(CH_2)_m$—$CH(CH_2)_n$ in which m is 0 or an integer from 1 to 6 and n is an integer from 2 to 7, CF_3, hydroxy, (lower)alkylthio, amino, (lower)alkylamino, di(lower)-alkylamino, carboxyl, or —$OCH_2C_6H_5$, or a pharmaceutically acceptable salt thereof, with the proviso that when R^1 and R^2 are tertiary alkyl or tertiary alkoxy they are located on non-adjcent positions.

4,209,624
PROCESS FOR PREPARING SUBSTITUTED BIS(AMIDINOUREAS)

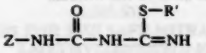
Ronald A. Wohl, Morris Plains, N.J., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 735,318, Oct. 26, 1976, abandoned. This application Jul. 19, 1977, Ser. No. 817,040
Int. Cl.[2] C07D *295/14*
U.S. Cl. 544—400 13 Claims

1. A process for preparing bis(amidinoureas) of the formula



comprising reacting a 1-substituted-4-loweralkyl-isothiobiuret of the formula



wherein Z is an aliphatic or alicyclic group and R′ is a lower alkyl group, with a compound containing two aliphatic amino groups of the formula

RNH—Y—NHR

wherein R represents hydrogen or a lower alkyl group and Y is a divalent organic radical selected from the group consisting of

(1) divalent straight and branched chain aliphatic radicals;
(2) divalent alicyclic and non-aromatic heterocyclic radicals;
(3) divalent carbocyclic aromatic and heterocyclic aromatic radicals having side chains; and
(4) combinations of the above radicals linked directly or through hetero atoms selected from the group consisting of nitrogen, oxygen, or sulfur,

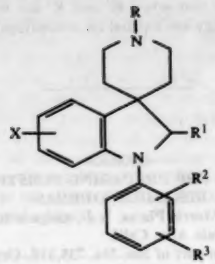
with the proviso that said Y group contains one or more nitrogen atoms and said isothiobiuret is used in the form of a mixture of the free base and an acid addition salt, the proportions of said free base and said addition salt being chosen so that the total amount of isothiobiuret is equal to or greater than the stoichiometric amount and the total amount of acid contained in the isothiobiuret salt is less than two moles per mole of compound containing two aliphatic amino groups.

4,209,625
SPIRO[INDOLINE-3,4′-PIPERIDINE]S

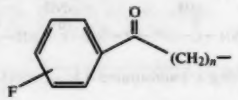
Helen H. Ong, Whippany, and James A. Profitt, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 789,723, Apr. 21, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,185
Int. Cl.[2] C07D *471/10*
U.S. Cl. 546—17 29 Claims

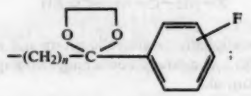
1. A compound of the formula



in which R is hydrogen, loweralkyl, cyano, loweralkanoyl, phenoxycarbonyl, phenylloweralkyl, phenylloweralkanoyl, loweralkenyl, cycloalkylloweralkyl, in which the cycloalkyl moiety contains 3 to 8 carbon atoms, benzoyl,



or ethylene glycol ketal of the formula



R^1 is hydrogen or loweralkyl; R^2 and R^3 are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy, hydroxy, nitro, amino, formamido or acetamido; X is hydrogen, halogen, loweralkyl, loweralkoxy or hydroxy; n is an integer from 1 to 4; and a physiologically acceptable salt thereof.

4,209,626

SUBSTITUTED 6-PHENYL-1,2,4-TRIAZOLO[4,3-a]PYRIDINES

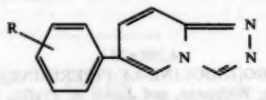
Ronald I. Trust, Monsey, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 15, 1979, Ser. No. 20,886

Int. Cl.[2] C07D *471/04;* A61K *31/44*

U.S. Cl. 546—119 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R is hydrogen, alkyl (C_1–C_4), alkoxy (C_1–C_4), fluoro, chloro, bromo, trifluoromethyl, cyano, carboxy, alkoxycarbonyl (C_2–C_5), carboxamido, nitro, amino, acetylamino, monoalkylamino (C_1–C_4) or dialkylamino wherein each alkyl group has up to 4 carbon atoms; and the pharmacologically acceptable acid-addition salts thereof.

4,209,627

2-(DIMETHYLCARBAMOYLIMINO)-1,3,4-THIADIAZOLINE-3-CARBOXYLIC ACID ESTER DERIVATIVES

Ludwig Nüsslein, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

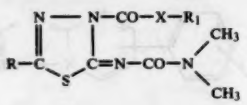
Filed Sep. 22, 1977, Ser. No. 835,529

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644426

Int. Cl.[2] A01N *9/12;* C07D *285/12*

U.S. Cl. 548—130 **3 Claims**

1. A compound of the general formula



wherein R is alkyl of 1 to 6 carbon atoms, alkenyl or alkinyl of 2 to 6 carbon atoms; R_1 is alkinyl of 2 to 8 carbon atoms, or halogenated alkinyl of 2 to 8 carbon atoms, and X is oxygen.

3. The compound 5-t-butyl-2-(dimethylcarbamoylimino)-1,3,4-thiadiazoline-3-thiocarboxylic acid-S-ethylester.

4,209,628

PROCESS FOR PREPARING 2-OXAZOLIDONE AND ITS DERIVATIVES

Sakuji Ikeda, Tokyo, and Kazuo Soga, Yokohama, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

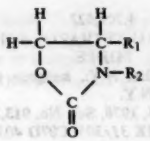
Continuation of Ser. No. 779,335, Mar. 21, 1977, abandoned. This application Apr. 26, 1978, Ser. No. 900,160

Claims priority, application Japan, Apr. 20, 1976, 51-45787

Int. Cl.[2] C07D *263/22*

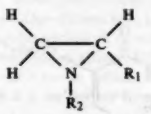
U.S. Cl. 548—229 **7 Claims**

1. A process for preparing 2-oxazolidone compounds of the formula



I

which comprises reacting carbon dioxide with an aziridine compound of the formula



II

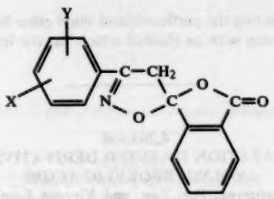
at a temperature of from 0° to 200° C., and a mol ratio of carbon dioxide to said aziridine compound of from 0.1 to 1000, wherein R_1 is selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl and benzyl and R_2 is selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, β-cyanoethyl, β-aminopropyl, α-hydroxyethyl, β-chloroethyl, phenyl, benzyl, and acyl selected from the group consisting of formyl, acetyl, propionyl, benzoyl, toluoyl, acryloyl and methacryloyl.

4,209,629
3'-(SUBSTITUTED PHENYL)-SPIRO[ISOBENZOFURAN-1(3H),5'(4'H)-ISOXAZOL]-3-ONES

Robert K. Howe, Bridgeton, and Kou-Chang Liu, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

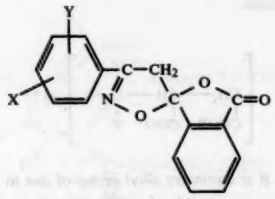
Filed Dec. 20, 1978, Ser. No. 971,462
Int. Cl.[2] C07D *307/94, 261/04;* A01N *9/22*
U.S. Cl. 548—241 16 Claims

1. A compound having the formula

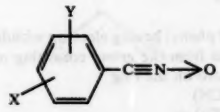


wherein X and Y are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, halo-lower-alkyl, phenoxy, phenyl and cyano.

12. A process for preparing compounds having the formula



wherein X and Y are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, halo-lower-alkyl, phenoxy, phenyl and cyano which comprises reacting a nitrile oxide having the formula



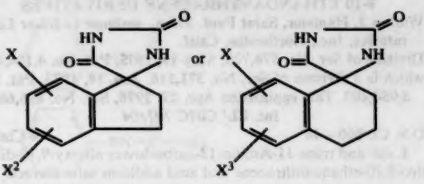
with 3-methylenephthalide in an inert solvent.

4,209,630
HYDANTOIN DERIVATIVES AS THERAPEUTIC AGENTS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 767,803, Feb. 11, 1977, Pat. No. 4,117,230, which is a continuation-in-part of Ser. No. 733,062, Oct. 18, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,105
Int. Cl.[2] C07D *491/10, 235/02*
U.S. Cl. 548—309 3 Claims

1. A compound of the formula:



or the base salts thereof with pharmacologically acceptable cations, wherein

X and X^2, when taken separately, are each lower alkoxy of 1–14 carbons, and when taken together are $—OCH_2(CH_2)_nO—$ located at the 5,6-positions of the molecule; and

X is hydrogen when X^3 is fluorine, chlorine or bromine; or

X and X^3, when taken separately, are each chlorine and when taken together are $—OCH_2(CH_2)_nO—$ located at the 6,7-positions of the molecule; and

n is zero or one.

4,209,631
PROCESS FOR THE SAFE NITRATION OF 2-METHYLIMIDAZOLE

Andrzej Zmójdzin; Kazimierz Urbański; Edmund Utecht, and Władysław Stelmachowski, all of Poznań, Poland, assignors to Zakłady Chemiczne "Aspeta" Spółdzielnia Pracy., Pobiedziska, Poland

Filed Jul. 2, 1973, Ser. No. 375,857
Int. Cl.[2] C07D *233/92*
U.S. Cl. 548—338 2 Claims

1. In a process for the production of 2-methyl-5-nitroimidazole which comprises treating 2-methylimidazole with a nitration mixture of nitric and sulphuric acids, cooling and reacting the mixture under reflux, an improvement which comprises adding to the reactants before the beginning of the nitration process a catalytic starting agent, consisting of an already reacted solution obtained by said nitration of 2-methylimidazole, whereby the induction period of the reaction is substantially shortened.

4,209,632
SULFONYL CARBAZATES

Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 743,209, Nov. 19, 1976, Pat. No. 4,135,049, which is a division of Ser. No. 599,304, Jul. 25, 1975, Pat. No. 4,012,432, which is a division of Ser. No. 476,752, Jun. 5, 1974, Pat. No. 3,925,270. This application Dec. 30, 1977, Ser. No. 866,121
Int. Cl.[2] C07C *143/825*
U.S. Cl. 560—13 6 Claims

1. A sulfonyl carbazate according to the formula

$$R—SO_2—NHNH—COOR'$$

wherein R is C_1–C_{12} alkyl; C_2–C_{10} alkenyl; aryl, aralkyl or alkaryl having 6 to 10 carbon atoms; or C_5–C_8 cyclo-alkyl and R' is a secondary alkyl radical having 3 to 8 carbon atoms.

4,209,633

9-10 ETHANOANTHRACENE DERIVATIVES

Walton J. Hammar, Saint Paul, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 578,725, May 19, 1975, Pat. No. 4,104,475, which is a division of Ser. No. 371,118, Jun. 18, 1973, Pat. No. 3,950,407. This application Apr. 17, 1978, Ser. No. 896,688
Int. Cl.[2] C07C *101/04*
U.S. Cl. 560—48 4 Claims

1. cis- and trans-11-Amino-12-carbo-lower alkoxy-9,10-dihydro-9,10-ethanoanthracene and acid addition salts thereof.

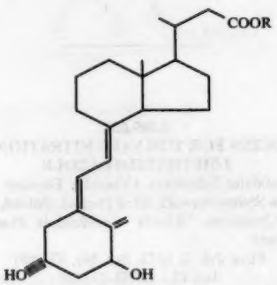
4,209,634

1α-HYDROXYCALCIOIC ACID AND ESTERS THEREOF

Hector F. DeLuca; Heinrich K. Schnoes, and Robert P. Esvelt, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 29, 1978, Ser. No. 440
Int. Cl.[2] C07C *61/38, 67/74*
U.S. Cl. 560—116 3 Claims

1. Compounds having the formula



where R is selected from the group consisting of hydrogen, a hydrocarbon chain having from 1 to about 4 carbon atoms and benzyl.

4,209,635

PROCESS FOR PRODUCING PERFLUORINATED VINYL ETHER HAVING ESTER GROUP

Seiji Munekata; Hiroshi Ukihashi, both of Tokyo; Masaaki Yamabe, Machida, and Isamu Kaneko, Yokohama, all of Japan, assignors to Asahi Glass Company Limited, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,785
Int. Cl.[2] C07C *69/65*
U.S. Cl. 560—183 8 Claims

1. A process for producing a perfluorinated vinyl ether having an ester group which has the formula

$$CF_2{=}CFOCF_2\left(\begin{array}{l}CFOCF_2\\ |\\ CF_3\end{array}\right)_n(R_F)_m(CF_2)_qCO_2R$$

wherein R_F represents a $C_{1\text{-}4}$ divalent perfluorinated radical; n represents 0 or 1; m represents 0 or 1; q represents 0 or 1 to 3; and R represents an organic radical which comprises pyrolyzing an assymetric diacyl halide which has the formula

$$FOC{-}CFOCF_2\left(\begin{array}{l}CFOCF_2\\ |\\ CF_3\end{array}\right)_n(R_F)_m(CF_2)_qCOX$$

wherein X represents a halogen atom selected from the group consisting of F, Cl and Br, in the vapor phase and with addition of water in an amount corresponding to not more than the saturated vapor pressure of water at room temperature to produce a perfluorinated vinyl ether having a halocarbonyl group which has the formula

$$CF_2{=}CFOCF_2\left(\begin{array}{l}CFOCF_2\\ |\\ CF_3\end{array}\right)_n(R_F)_m(CF_2)_qCOX$$

and then reacting the perfluorinated vinyl ether having a halocarbonyl group with an alcohol which has the formula ROH.

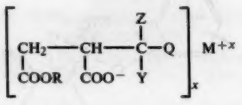
4,209,636

PREPARATION OF ESTER DERIVATIVES OF POLYCARBOXYLIC ACIDS

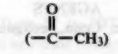
Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 642,850, Dec. 22, 1975, Pat. No. 4,123,458. This application May 15, 1978, Ser. No. 905,676
Int. Cl.[2] C07C *67/30, 69/34, 69/66, 120/00*
U.S. Cl. 560—190 5 Claims

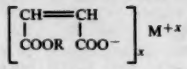
1. A process for preparing a polyfunctional compound of the general formula:



(A) wherein R is a primary alkyl group of one to four carbon atoms,
(B) wherein M is a lithium, sodium, potassium, magnesium, calcium, strontium or barium cation,
(C) wherein x is 1 or 2 and is equivalent to the valency of M,
(D) wherein Q is H or a primary alkyl group of 1 to 4 carbon atoms,
(E) wherein Z is
(1) phenyl
(2) substituted phenyl having electron withdrawing substituents selected from the group consisting of chlorine, bromine and nitro on the ring
(3) cyano (—CN)
(4) nitro (—NO_2) or
(5) carboxylic ester (—$COOR_2$) wherein R_2 is a primary alkyl group of about 1–4 carbon atoms,
(F) wherein Y is dependent on Z, and
(1) when Z is a carboxylic ester (—$COOR_2$), Y is
(a) a carboxylic moiety (—$COOR_1$) wherein R_1 is
(i) a lithium, sodium or potassium cation or
(ii) a primary alkyl group of about 1–4 carbon atoms,
(b) cyano (—CN)
(c) acetyl



(2) when Z is cyano, phenyl or substituted phenyl, Y represents cyano (—CN) and
(3) when Z is nitro (—NO_2) Y, is hydrogen or methyl, comprising:
reacting by heating, a salt of a monoalkyl ester of maleic acid of the general formula



wherein said x, R and M are as previously defined, with an active hydrogen containing compound of the general formula

wherein said Q, Z and Y are as previously defined.

4,209,637

2,2-DIFLUORO-PGF$_2$ ANALOGS

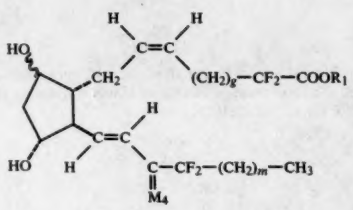
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300. This application Sep. 17, 1976, Ser. No. 724,110

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—121 **6 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

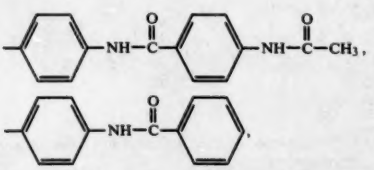
wherein g is 2 to 4, inclusive;

wherein M_4 is

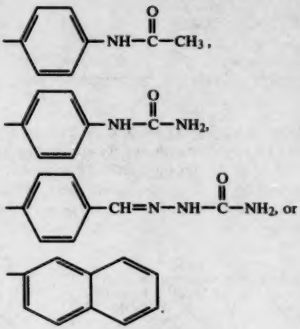
or

wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



-continued



4,209,638

PREPARATION OF THERAPEUTIC AGENTS

John S. Nicholson, Chilwell, and James G. Tantum, Nuthall, both of England, assignors to The Boots Company Limited, Nottingham, England

Continuation-in-part of Ser. No. 884,422, Mar. 8, 1978, abandoned. This application Sep. 25, 1978, Ser. No. 945,481

Claims priority, application United Kingdom, Mar. 8, 1977, 9697/77; Jan. 18, 1978, 1946/78

Int. Cl.^{2} C07B *19/00, 20/00*

U.S. Cl. 562—401 **22 Claims**

1. A process for increasing the proportion of a desired enantiomer of a 2-arylpropionic acid which comprises heating at a temperature of at least 80° C. a mixture comprising a salt of said 2-arylpropionic acid with an enantiomer of a chiral organic nitrogenous base and an inert liquid organic diluent in which the salt of the racemic acid has a solubility of 0.1 to 10% w/v at the operating temperature, and is used in an amount such that a portion of the salt is undissolved in the diluent, continuing the heating until a portion of one optical isomer of the acid component of the salt is converted into its enantiomer, then recovering the solid salt in which the acid compound now has an increased and preponderant proportion of that enantiomer, and separating the acid component therefrom.

4,209,639

13-THIA-PROSTAGLANDINS

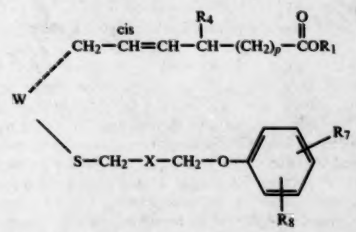
Allan Wissner, Monsey, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 22, 1975, Ser. No. 615,274

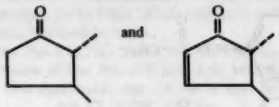
Int. Cl.^{2} C07C *177/00, 149/26, 149/40*

U.S. Cl. 562—426 **8 Claims**

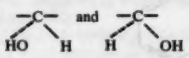
1. A compound selected from the group consisting of an optically active compound of the formula:



and a racemic compound of that formula and the mirror image thereof, wherein w is selected from the group consisting of:



; R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms; R_7 and R_8 are each individually selected from the group consisting of hydrogen, halogen, alkyl having up to 3 carbon atoms and trifluoromethyl; X is a divalent radical selected from the group consisting of those of the formulae:



R_4 is hydrogen or alkyl having up to 3 carbon atoms, and p is an integer from 2 to 5 inclusive; and the pharmacological acceptable salts thereof when R_1 is hydrogen.

4,209,640

CATALYSTS FOR THE OXIDATION OF UNSATURATED ALDEHYDES

Haruhisa Yamamoto, and Kiyomori Ooura, both of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,764
Claims priority, application Japan, Feb. 3, 1978, 53-11331
Int. Cl.[2] C07C 51/32
U.S. Cl. 562—532 **5 Claims**

1. A process for preparing unsaturated carboxylic acids, which comprises catalytically oxidizing unsaturated aldehydes in the vapor phase using molecular oxygen in the presence of a catalyst expressed by the formula

$$A_aB_bCe_cMo_dP_eO_f$$

wherein A represents at least one element selected from K, Rb, Cs and Tl; B represents at least one of Be, Sr, Pb, Cr, Ag, Ca, Y, Ge, Te, La, Nd or Sm; a, b, c, d, e, and f are the number of the atoms of A, B, Ce, Mo, P and O, respectively; and when d is 12, a, b, c and e are independently 0.05 to 12, and f is the number of oxygen atoms which satisfies the valences of the other elements.

4,209,641

PROCESS FOR THE PRODUCTION OF POLYTETRAMETHYLENE ETHER GLYCOL

Takayoshi Masuda; Tsutomu Takase; Yoshimoto Watanabe, and Fumio Yamazaki, all of Nagoya, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,657
Claims priority, application Japan, Dec. 26, 1978, 52-155682
Int. Cl.[2] C07C 41/00
U.S. Cl. 568—617 **19 Claims**

1. A process for the production of polytetramethylene ether glycol comprising subjecting tetrahydrofuran to a ring opening polymerization at a temperature of −40° to 50° C. in the presence of: (a) a lithium halide selected from the group consisting of lithium chloride, lithium fluoride, lithium iodide, lithium bromide, and mixtures thereof and (b) fuming sulfuric acid containing free sulfuric anhydride in a concentration of 3 to 45 weight percent, the amount of the lithium halide being 0.001 to 20 percent by weight of the tetrahydrofuran, the amount of the fuming sulfuric acid being 3 to 60 percent by weight of the tetrahydrofuran, terminating the polymerization with water, and hydrolyzing the polymerization product to convert sulfuric acid terminal groups of the product to hydroxyl groups.

4,209,642

CYCLOPROPYLMETHANOL PESTICIDE

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 953,987, Oct. 23, 1978. This application Mar. 15, 1979, Ser. No. 20,607
Int. Cl.[2] C07C 43/30
U.S. Cl. 568—591 **2 Claims**

1. [2,2-Dimethyl-3-(2,2-dimethoxyethyl)cyclopropyl]methanol.

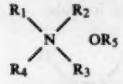
4,209,643

PREPARATION OF ACETALS

Kju H. Shin, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 11, 1978, Ser. No. 967,971
Int. Cl.[2] C07C 43/30
U.S. Cl. 568—594 **13 Claims**

1. A process for preparing linear and alpha-branched acetals by reacting olefin having 3 or more carbon atoms with carbon monoxide, hydrogen and a C_1–C_5 alkanol at a temperature of from about 70° C. to about 180° C. and a pressure of from about 400 psig to about 4000 psig in the presence of a cobalt catalyst and a quaternary ammonium salt promoter characterized as having the following formula:



wherein R_1, R_2, R_3 and R_4 are alkyl, aralkyl, cycloalkyl or aryl in which the total number of carbon atoms is from 4 to 60 and R_5 is H, CH_3, C_2H_5, $CH(CH_3)_2$ or

wherein the promoter: cobalt molar ratio is from about 1:2 to about 1:20.

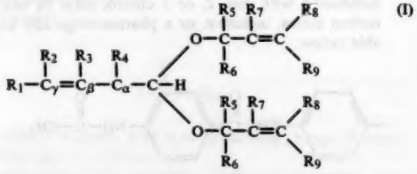
4,209,644

ALLYL ACETYL DERIVATIVES OF β, γ-UNSATURATED ALDEHYDE

Yataro Ichikawa, Iwakuni; Teizo Yamaji, Yamaguchi, and Mamoru Yamamoto, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 735,954, Oct. 27, 1976, abandoned, which is a continuation of Ser. No. 496,833, Aug. 12, 1974, abandoned. This application Nov. 30, 1977, Ser. No. 856,179
Claims priority, application Japan, Aug. 16, 1973, 48-91280; Oct. 2, 1973, 48-110179; Oct. 5, 1973, 48-112114; Nov. 21, 1973, 48-130109
Int. Cl.[2] C07C 43/30; C11B 9/00
U.S. Cl. 568—596 **5 Claims**

1. Allyl acetal derivatives of formula (I)



(I)

wherein

R_1 is a hydrogen atom or alkyl group of 1 to 4 carbon atoms,

R_2 is a hydrogen atom,

R_3 and R_4 may be the same or different and each represents a hydrogen atom or methyl group,

R_5, R_6, R_7 and R_8 may be the same or different and each represents a hydrogen atom or methyl group, and

R_9 is a hydrogen atom, saturated aliphatic hydrocarbon group of 1 to 16 carbon atoms or unsaturated aliphatic hydrocarbon group of 2 to 11 carbon atoms.

4,209,645

2-DECARBOXY-2-HYDROXYMETHYL $PGF_{2\alpha}$ ANALOGS

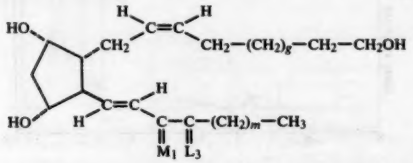
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 784,995, Apr. 6, 1977, which is a division of Ser. No. 647,369, Jan. 8, 1976, Pat. No. 4,032,576. This application Mar. 15, 1979, Ser. No. 20,599

Int. Cl.[2] C07C *177/00*

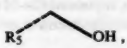
U.S. Cl. 568—670 **1 Claim**

1. A prostaglandin analog of the formula



wherein M_1 is

or



wherein R_5 is hydrogen or methyl;
wherein L_3 is

or a mixture of

and

wherein one of R_3 and R_4 is fluoro and the other is hydrogen or fluoro;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

4,209,646

PROCESS FOR CRYSTALLIZING AN ADDUCT OF 2,2-DI(4-HYDROXYPHENYL) PROPANE AND PHENOL

Robert Gac, Caluire; Jean-Pierre Dal Pont, Pont de Claix, and Frederic Levet, Caluire, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 627,696, Oct. 31, 1975, abandoned. This application Sep. 26, 1977, Ser. No. 836,768

Claims priority, application France, Oct. 31, 1974, 74 40170

Int. Cl.[2] C07C *37/22, 39/16*

U.S. Cl. 568—724 **21 Claims**

1. A process for crystallizing an adduct of pure diphenylolpropane and phenol, which comprises (i) preparing a liquid mixture of impure diphenylolpropane, phenol and water, said mixture comprising less than about 15% by weight of water and said mixture being prepared at a temperature sufficient to maintain same in a substantially liquid state, but not in excess of about 100° C., (ii) cooling said substantially liquid mixture to a temperature at least as low as about 60° C., while (iii) simultaneously applying thereto a vacuum essentially corresponding to the vapor pressure of the vapor phase of said mixture, and (iv) whereby an adduct of pure diphenylolpropane and phenol is crystallized.

21. A process for crystallizing an adduct of pure diphenylolpropane and phenol, which comprises (i) preparing a substantially liquid mixture of impure diphenylolpropane, phenol and water, said mixture comprising less than about 15% by weight of water and said mixture being prepared at a temperature within the range of from about 70° C. to about 100° C., (ii) cooling said substantially liquid mixture to a temperature within the range of from about 25° C. to about 60° C., while simultaneously applying thereto a vacuum essentially corresponding to the vapor pressure of the vapor phase of said mixture and said vacuum being within the range of from about 20 to 120 mm Hg., and (iv) whereby an adduct of pure diphenylolpropane and phenol is crystallized.

4,209,647

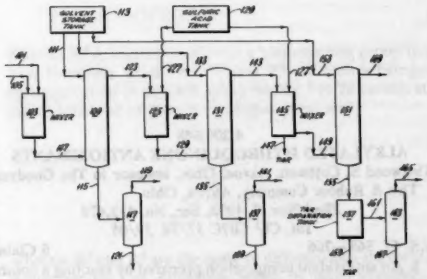
FRACTIONATION OF OIL OBTAINED BY PYROLYSIS OF LIGNOCELLULOSIC MATERIALS TO RECOVER A PHENOLIC FRACTION FOR USE IN MAKING PHENOL-FORMALDEHYDE RESINS

Robert M. Gallivan, Erie, Pa., and Peter K. Matschei, Plainsboro, N.J., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 22, 1978, Ser. No. 918,040

Int. Cl.[2] C07C *37/28*

U.S. Cl. 568—762 **16 Claims**



1. A method of recovering a phenolic fraction from distillate oil obtained by pyrolysis of lignocellulosic waste materials comprising a neutral fraction, a phenolic fraction, organic acids and solid amorphous residue, which method comprises:

(a) mixing said oil and a base selected from the group consisting of sodium hydroxide, potassium hydroxide and ammo-

nium hydroxide to obtain a mixture having a pH in the range of from about 11 to about 13;

(b) contacting said mixture, in a first extraction zone, at a temperature ranging from about ambient temperatures to about the boiling point of the solvent, with a solvent selected from the group consisting of ether, methylene chloride, chloroform, butanol and hydrocarbons, wherein the volumetric flow rates of the solvent to said mixture is from about 3:1 to about 1:1, to thereby selectively extract the neutral fraction of said oil;

(c) removing a first raffinate from said first raffinate to said first extraction zone and recovering the neutral fraction from said first extract;

(d) mixing said first raffinate with a mineral acid or carbon dioxide until the pH of said first raffinate is lowered to the range of from about 7.5 to about 9.0 and contacting the resulting mixture with said solvent in a second extraction zone, at a temperature ranging from about ambient temperature to about the boiling point of the solvent, wherein the volumetric flow rates of the solvent to said mixture is from about 3:1 to about 1:1, to thereby selectively extract the phenolic fraction of said oil;

(e) removing a second extract containing said phenolic fraction, and a second raffinate from said second extraction zone, and

(f) recovering said phenolic fraction from said second extract.

4,209,648

ALKYLATED HYDROQUINONE ANTIOXIDANTS

Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 7, 1973, Ser. No. 413,478
Int. Cl.[2] C07C *37/14, 39/08*
U.S. Cl. 568—766 5 Claims

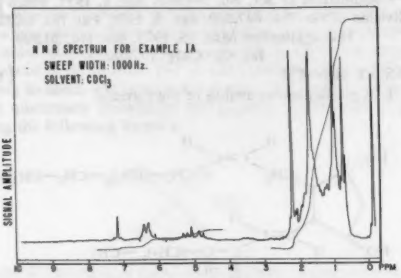
1. An antioxidant composition prepared by reacting a combination comprising hydroquinone and an olefin selected from the group consisting of nonenes and 2,4,4-trimethyl-1-pentene at a temperature from 65° C. to a temperature less than the boiling point of the olefin in the presence of a Friedel-Crafts catalyst, the molar ratio of the olefin to the hydroquinone being from 1:1 to 10:1 where the olefin is nonene and 1.5:1 to 3:1 where the olefin is 2,4,4-trimethyl-1-pentene.

4,209,649

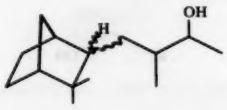
NOVEL OXYHYDROCARBYLNORBORNANE DERIVATIVES AND PERFUMERY USES THEREOF

Kenneth K. Light, Highlands; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 860,124, Dec. 13, 1977, Pat. No. 4,186,150, which is a continuation-in-part of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Apr. 24, 1979, Ser. No. 32,852
Int. Cl.[2] C07C *35/22*
U.S. Cl. 568—820 1 Claim



1. An oxyhydrocarbylnorbornane having the structure:



wherein the wavy lines represent C—H and C—C single bonds in a "cis" or "trans" configuration with respect to the norbornyl moiety.

4,209,650

PROCESS FOR PRODUCING ETHYLENE GLYCOL

Olav T. Onsager, Suffern, N.Y., and Peter L. Szecsi, Montclair, N.J., assignors to Halcon International, Inc., New York, N.Y.

Filed May 28, 1976, Ser. No. 691,112
Int. Cl.[2] C07C *29/02*
U.S. Cl. 568—860 3 Claims

1. In a process for the preparation of ethylene glycol by the reaction of reactants consisting essentially of ethylene, molecular oxygen and water in the presence of an iodine catalyst at a temperature of 50° to 250° C. and under a pressure sufficient to maintain the liquid phase, the improvement which comprises the addition of a copper co-catalyst or promoter to the reaction system, the copper co-catalyst being present in the amount of 10 ppm to 5 wt. percent based upon the liquid reaction mixture and the iodine catalyst, expressed as HI, being present in the amount of 0.1 to 20 wt. percent of the liquid reaction mixture, the molar ratio of ethylene to oxygen varying from 100:1 to 1:100 and the ratio of ethylene to water varying from 10:1 to 1:100.

4,209,651
HYDROGENATION OF BUTADIENEPOLYPEROXIDE TO UNSATURATED DIOLS

William W. Prichard, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

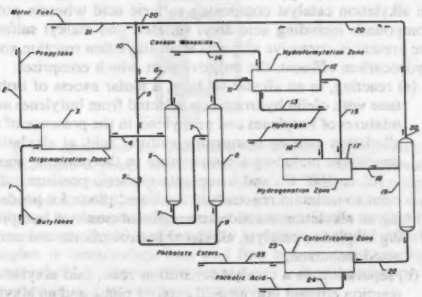
Filed Feb. 21, 1979, Ser. No. 13,236
Int. Cl.[2] C07C *31/20, 33/02*
U.S. Cl. 568—861 14 Claims

1. A process for hydrogenating butadienepolyperoxide which comprises hydrogenating 1-20% by weight of butadienepolyperoxide in a solvent which is stable under the reaction conditions in the presence of hydrogen and a catalyst consisting essentially of at least 0.1% by weight of metallic silver at a temperature of from 75°-110° C. and a pressure of at least 2000 psia to form a reaction product containing 1-butene-3,4-diol and 2-butene-1,4-diol.

4,209,652
PROCESS FOR PRODUCTION OF MOTOR FUEL AND PHTHALATE ESTERS OR ACYCLIC ALCOHOLS

Dennis J. Ward, South Barrington, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 10, 1979, Ser. No. 2,504
Int. Cl.[2] C07C *29/16, 3/10*
U.S. Cl. 568—882 4 Claims



1. A process for the simultaneous production of a C_8 to C_{10} acyclic alcohol and a motor fuel blending stock which comprises the steps of:

(a) passing a feed stream comprising a C_3 to C_4 olefin into an oligomerization zone operated at oligomerization-promoting conditions and effecting the production of an oligomerization zone effluent stream comprising C_6 to C_{10} hydrocarbons including C_7 to C_9 acyclic olefinic hydrocarbons;

(b) separating the oligomerization zone effluent stream into a light fraction comprising C_6 hydrocarbons, an intermediate fraction comprising C_7 to C_9 acyclic olefinic hydrocarbons and a heavy fraction comprising C_{10} hydrocarbons;

(c) contacting the intermediate fraction with a hydroformylation catalyst at hydroformylation conditions in admixture with carbon monoxide and hydrogen and effecting the production a hydroformylation zone effluent stream comprising C_8 to C_{10} acyclic alcohols, C_8 to C_{10} acyclic aldehydes and at least 20 mole percent C_7 to C_9 acyclic olefinic hydrocarbons, with the hydroformylation conditions being effective to result in less than 60 mole percent of any dialkyl olefins and less than 90 mole percent of any trialkyl olefins present in the feed stream from being converted in said hydroformylation zone;

(d) passing the entire hydroformylation zone effluent stream through a hydrogenation zone operated at aldehyde hydrogenation conditions and effecting the formation of a hydrogenation zone effluent stream;

(e) separating the hydrogenation zone effluent stream into a light fraction rich in C_7 to C_9 acyclic olefinic hydrocarbons withdrawn as a product stream and a heavy fraction rich in the C_8 to C_{10} acyclic alcohol; and,

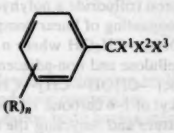
(f) combining the light fraction of the hydrogenation zone effluent stream and the light and heavy fractions of the oligomerization zone effluent stream to form a product stream useful as motor fuel blending stock.

4,209,653
α-OLEFIN DIMER ISOMERIZATION USING ORGANO-HALOGENS

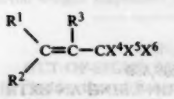
Hiroshi Sato, Toyonaka; Hideto Tojima, Kyoto, and Seimei Yasui, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,978
Claims priority, application Japan, Aug. 11, 1977, 52/96679
Int. Cl.[2] C07C *5/24, 3/21*
U.S. Cl. 585—313 8 Claims

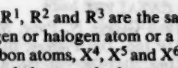
1. In a process for isomerization of a dimer of a lower α-olefin produced by dimerizing the lower α-olefin with a dimerization catalyst comprising a nickel compound and an organo-aluminum compound, the improvement comprising adding at least one compound selected from the group consisting of the following organo-halogen compounds of the formulae (I), (II), (III) and (IV),


(I)

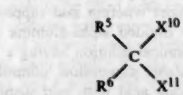
wherein X^1, X^2 and X^3 are the same or different and are each a halogen or hydrogen atom or an alkyl group having 1 to 20 carbon atoms and at least one of them is a halogen atom, R is a hydrocarbon group having 1 to 20 carbon atoms and n is an integer of 0 to 5,


(II)

wherein R^1, R^2 and R^3 are the same of different and are each a hydrogen or halogen atom or a hydrocarbon group having 1 to 20 carbon atoms, X^4, X^5 and X^6 are the same or different and are each a halogen or hydrogen atom or an alkyl group having 1 to 20 carbon atoms and at least one of them is a halogen atom,


(III)

wherein R^4 is hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms, X^7, X^8 and X^9 are each a halogen or hydrogen atom or an alkyl group having 1 to 20 carbon atoms and at least one of them is a halogen atom, and


(IV)

wherein R^5 and R^6 are the same or different and are each alkyl group having 1 to 20 carbon atoms, or taken together, may form a cycloalkyl group having 3 to 7 carbon atoms, X^{10} and X^{11} are the same or different and are each a halogen or hydrogen atom or an alkyl group having 1 to 20 carbon atoms and at least one of them is a halogen atom to the reaction system, prior to deactivation of said dimerization catalyst, in an amount of 0.1 to 100 moles per 1 mole of said organo-aluminum compound in the catalyst, and then continuing the reaction at a

temperature of −50° to 200° C. and thereby isomerizing said α-olefin dimer.

4,209,654

RECYCLABLE BORON TRIFLUORIDE CATALYST AND METHOD OF USING SAME

Robert E. Booth; Francis E. Evans, both of Hamburg; Richard E. Eibeck, Orchard Park, and Martin A. Robinson, East Amherst, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Oct. 16, 1978, Ser. No. 951,911
Int. Cl.[2] C07C *3/56, 3/18*
U.S. Cl. 585—465 12 Claims

1. In a method of reacting at least one unsaturated hydrocarbon in an alkyl transfer reaction of the type catalyzed by boron trifluoride, the improvement which comprises conducting the reaction in the presence of a catalytic amount of an adduct formed by saturating with boron trifluoride a polyhydric alcohol selected from the group consisting of linear compounds of the formula $CH_2OH—(CHOH)_n—CH_2OH$ where n is 1 to 5, pentaerythritol, crystalline cellulose and non-adjacent diols of 5–10 carbons of the formula $R_1—CHOH—CH_2—CHOH—R_2$ where R_1 and R_2 are each alkyl of 1–6 carbons, recovering the adduct from the reaction mixture and recycling the adduct.

4,209,655

OLEFIN ISOMERIZATION USING AN EXTRUDED ALUMINA PASTE SUPPORTING A PLATINUM GROUP METAL CATALYST

Roy T. Mitsche, Wauconda, and George N. Pope, McHenry, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 921,159, Jun. 30, 1978, Pat. No. 4,149,884, which is a continuation-in-part of Ser. No. 788,376, Apr. 18, 1977, Pat. No. 4,098,874. This application May 16, 1979, Ser. No. 39,546
Int. Cl.[2] C07C *5/24*
U.S. Cl. 585—664 17 Claims

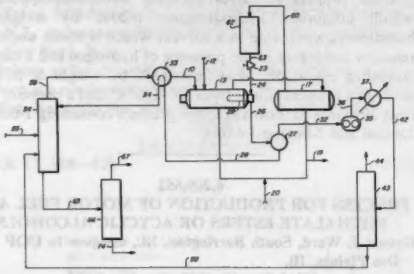
1. A process for isomerizing an isomerizable olefinic hydrocarbon which comprises contacting said olefinic hydrocarbon, at isomerization conditions, with a catalytic composite consisting essentially of a combination of platinum group metal component and an alumina support wherein said support is prepared by admixing a finely divided alpha-alumina monohydrate with an aqueous ammonical solution having a pH of at least about 7.5 to form a stable suspension, commingling a catalytic metal salt of a strong acid with said suspension to form the suspension into an extrudable paste or dough, extruding said paste or dough to form an extrudate, drying and calcining said extruded alumina support.

4,209,656

SULFURIC ACID CATALYZED ALKYLATION PROCESS

Gerald F. Prescott, Bridge City, and Charles T. Lewis, Jr., Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,506
Int. Cl.[2] C07C *3/54*
U.S. Cl. 585—715 3 Claims



1. In an effluent refrigerated alkylation process for alkylating isobutane with propylene and/or butylenes in the presence of an alkylation catalyst comprising sulfuric acid wherein polar compounds including acid alkyl sulfates, and dialkyl sulfates are present in corrosive amounts in an alkylation reaction zone hydrocarbon effluent, the improvement which comprises:

(a) reacting, in an alkylation zone, a molar excess of isobutane with olefin hydrocarbon selected from butylenes and mixtures of butylenes and propylene, in the presence of an alkylation catalyst comprising sulfuric acid, at alkylation conditions including a temperature in the range of about −20° to 100° F., and a superatmospheric pressure sufficient to maintain reactants in the liquid phase for producing an alkylation reaction zone effluent emulsion comprising alkylation catalyst, alkylated hydrocarbons, and unreacted isobutane;

(b) separating, in a catalyst separation zone, said alkylation reaction effluent into an acid catalyst phase and an alkylation reaction hydrocarbon effluent phase comprising alkylated hydrocarbon and unreacted isobutane, and containing corrosive amounts of polar compounds including acid alkyl sulfates and dialkylsulfates;

(c) contacting, in a treating zone, said alkylation reaction hydrocarbon effluent, in the liquid phase, with solid adsorbent for adsorbing said polar compounds and producing a treated hydrocarbon effluent substantially free of corrosive polar compounds;

(d) flashing, by adiabatic expansion at a reduced pressure, said treated hydrocarbon effluent for producing a chilled mixture of hydrocarbon vapor and hydrocarbon liquid;

(e) exchanging heat, in an indirect heat exchange zone, from said alkylation reaction zone emulsion to said chilled hydrocarbon vapor-liquid mixture for maintaining a selected alkylation reaction temperature; and

(f) separating, in a vapor-liquid separation zone, said hydrocarbon vapor-liquid mixture into a hydrocarbon vapor phase comprising isobutane and a hydrocarbon liquid phase comprising isobutane and alkylated hydrocarbon;

(g) fractionating said hydrocarbon vapor phase for recovery of isobutane for recycle to said alkylation reaction zone;

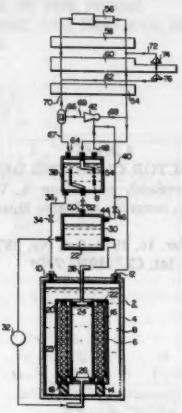
(h) fractionating, said hydrocarbon liquid phase for recovery of an alkylated hydrocarbon product fraction and isobutane for recycle to said alkylation reaction zone.

4,209,657

APPARATUS FOR IMMERSION-COOLING SUPERCONDUCTOR

Nobuhiko Inai, Kamakura, and Akihiko Miura, Inagi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 31, 1977, Ser. No. 801,601
Claims priority, application Japan, May 31, 1976, 51/63054
Int. Cl.[2] H01L *39/02*
U.S. Cl. 174—15 CA 15 Claims



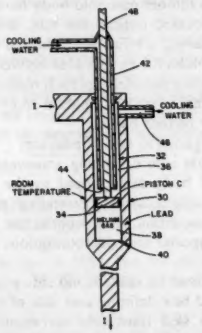
1. An apparatus for an immersion-cooled superconductor including a cryostat which comprises an envelope provided with a heat-insulating means; a first low temperature liquid received in said heat-insulating vessel; an interior vessel made of good heat-conducting material and immersed in the first low temperature liquid; a second low temperature liquid which is higher in temperature than said first low temperature liquid and is held in the interior vessel; and a superconductor immersed in said second low temperature liquid.

4,209,658

METHOD AND APPARATUS FOR OPTIMIZING CURRENT LEADS CARRYING VARYING CURRENT

Mohamed A. Hilal, 541 ERB 1500 Johnson Dr., Madison, Wis. 53706

Filed Aug. 15, 1977, Ser. No. 824,337
Int. Cl.[2] H01B *12/00*
U.S. Cl. 174—15 CA 9 Claims



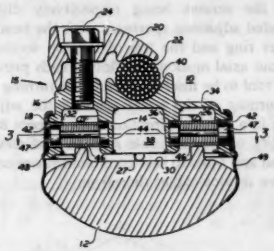
1. The method for optimizing the refrigeration power required by current leads carrying varying current in the superconducting systems comprising the steps of varying the location of the room temperature point of the lead (the point at which the lead temperature is equal to the ambient temperature) to adjust the length of lead extended below the room temperature point inversely so that it is proportional to the change in current carried by the lead.

4,209,659

VIBRATION DAMPER FOR OVERHEAD CONDUCTORS

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,340
Int. Cl.[2] H02G *7/14*
U.S. Cl. 174—42 7 Claims



1. A device for damping aeolian vibration of a single overhead conductor comprising:

a suspension body having means for clamping the device to a conductor;

at least three separate resilient damping members equally and radially spaced about a vertical axis through said device;

means connecting opposite ends of said resilient damping members to the suspension body; and

an inertial weight suspended from the damping members.

4,209,660

OUT-OF-SIGHT SERVICE FITTINGS

Charles T. Flachbarth, and Robert W. Hadfield, both of Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.

Filed Sep. 7, 1978, Ser. No. 940,251
Int. Cl.[2] H02G *3/12*
U.S. Cl. 174—48 5 Claims

1. In an out-of-sight service fitting:

a U-shaped base section having a pair of flanges respectively at opposite edges of the section;

a U-shaped top section overlying the base section and having a pair of flanges respectively engaging first said flanges, the base and top sections forming a hollow chamber with a pair of duct openings to the chamber extending between said flanges and the top section having an access opening providing access to the hollow chamber;

means connected with said sections to mount the same on the area to be filled with concrete and to raise and lower the sections with respect to the area;

a pair of adaptors respectively disposed in said duct openings, each adaptor having a socket for mounting a power duct and a socket for mounting a communications duct, the sockets being separated by a center section;

mechanism in said chamber and extending between said adaptors and between said base and top sections and forming a barrier across the chamber and having jack means for mounting an electrical plug, the barrier dividing the chamber into a power compartment and a communications compartment electrically isolated from one another and respectively open to said sockets, the sockets providing passageways respectively between the power and communications compartments and the power and

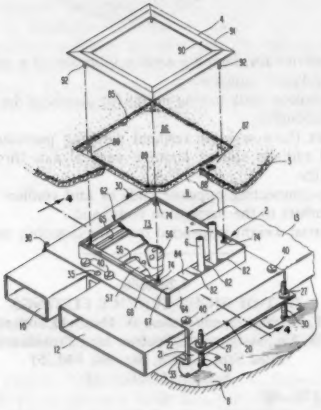
communications ducts when the same are mounted in the sockets and said jack means facing said communication compartment for receiving a plug and said communications compartment being adapted to receive a communications connector and also form a passageway for power and communication service cables extending from the fitting;

a plaster ring fixed to the top of said top section around said access opening;

an adjusting ring inside of said plaster ring and having an inwardly extending cover mounting section and a inwardly extending service cable exit section, the cover mounting section having a plurality of threaded adjusting apertures;

a set of adjusting screws each having a head and a slotted end, the screws being respectively disposed in said threaded adjusting apertures with the heads between the plaster ring and the top of the top section for rotation without axial motion, the slotted ends providing a means for a tool to be inserted therein for turning the screw and the turning of the screw causing the adjusting ring to move in a vertical direction with respect to the plaster;

a plurality of service cable slots in said service cable exit section and open to said communications compartment to receive service cables therefrom;



a cover on said mounting section and flush with the top edge of the adjusting ring and with the top of said service cable exit section and one edge of the plate being adjacent said closure clips;

means for removably securing the cover to said cover mounting section;

a plurality of trim ring apertures in said cover mounting section and a plurality of trim ring apertures in said cover;

a section of carpet on said cover and a piece of carpet on said service cable exit section, the piece having at least one opening through which a service cable extends;

a trim ring having inboard and outboard flanges and a plurality of studs connected to the underside of the ring, said inboard flange extending over the peripheral edge of said section of carpet and said outboard flange extending over the edge of said piece of carpet and said studs extending down through said section of carpet and through said trim ring apertures;

a plurality of fasteners respectively on said studs and engaging the underside of said cover for maintaining the cover, the section of carpet mounted thereon and the trim ring as an assembly; and

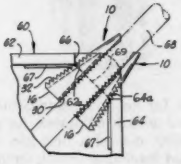
said outboard flange being disposed with respect to said slots to provide clearance space for exit of said service cable whereby said assembly can be removed and replaced without interference from said service cable.

4,209,661

CONDUCTOR CLAMPING DEVICE

Harold T. Pate, Cleveland, and Glenn A. Wozniak, Chagrin Falls, both of Ohio, assignors to Indian Head Inc., New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,069
Int. Cl.[2] H02G 7/04
U.S. Cl. 174—65 R **4 Claims**



1. In combination:

a synthetic resin electrical box having side walls;

a substantially rectangular opening through said side walls into said box;

a generally cylindrical insulated electrical conductor having an end portion extending through said opening into the interior of said box; and

a clamping device wedged in said opening between said insulated conductor and said box, said clamping device comprising a wedge-shaped body tapering in thickness from one relatively thick end inside said box to a second relatively thinner end, and having a relatively larger transverse dimension at its thicker end than its transverse dimension at its thinner end, said body having its relatively thinner end located outside the box, and said relatively thinner end having a bifurcation therein receiving a portion of said conductor and located between two co-directionally extending parallel legs each resiliently flexible in a direction normal to said bifurcation and toward the other leg, said body further having

a first side contiguous to said conductor;

teeth on said first side extending transversely across said wedge-shaped body and normal to the bifurcation between said co-directionally extending parallel legs for impaling the insulation of the conductor;

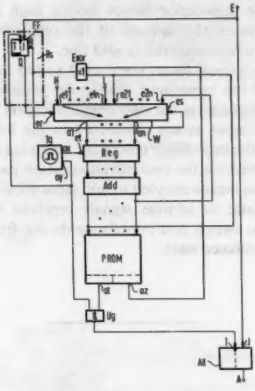
a second side opposite said side contiguous to said conductor; and

transverse serrations on said second side engaged with said portion of said box defining one side of said rectangular opening, with said transverse serrations being located between said relatively thick end of said wedge-shaped body and said co-directionally extending parallel legs, said legs having smooth surfaces on their sides forming portions of said second side of said body.

4,209,662
CIRCUIT ARRANGEMENT FOR SCANNING THE CHARACTER ELEMENTS OF CHARACTERS AT ARBITRARILY DETERMINABLE POINTS, IN PARTICULAR FOR THE CORRECTION OF TELETYPEWRITER CHARACTERS

Herbert Steiner, Gelting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,087
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744216; Feb. 28, 1978, 2808566
Int. Cl.[2] H04L *7/00*; H04J *3/06*; H04L *13/08*
U.S. Cl. 178—69 A **8 Claims**



1. In a circuit arrangement for scanning the character elements of characters, respectively occurring with a prescribed duration, at arbitrarily determinable points, in particular for the correction of teletypewriter characters in which a scanner scans the individual character elements with the aid of scanning pulses produced by a pulse generator, and in which the scanning pulses can be fed to a scanning circuit together with the individual character elements, the improvement therein comprising:

an adder circuit;

a pulse-controlled multi-stage register in the pulse generator including an output connected to its input via said adder circuit so that code words contained in the register can respectively be altered by a prescribed value with every pulse actuation;

a store including an input connected to the output of said register, said store containing stored control signals in specific storage locations which can be actuated by the code words of the register so that with the actuation of the respective storage locations, beginning after the start of the character is determined, the control signals contained in said storage locations cause the production of output pulses from the output of said store, which output pulses are applied as the desired scanning pulses.

4,209,663
DRIVE-IN THEATER AUDIO SYSTEM

Kiichi Sekiguchi, 145 N. Almont Dr., #202, Los Angeles, Calif. 90048

Filed Apr. 6, 1978, Ser. No. 893,884
Int. Cl.[2] H04H *1/00*
U.S. Cl. 179—1 DD **20 Claims**

1. A system for use in a drive-in theater for reproducing motion picture audio in a plurality of automobiles having radio receivers, said theater having unshielded audio wiring circuits which normally carry audio frequency transmissions, said system comprising:

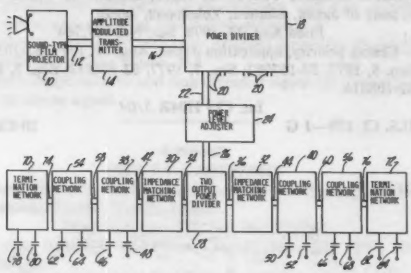
a sound type motion picture projector;

an amplitude modulated, radio frequency, transmitter connected to the audio output of the projector;

power dividing means having a plurality of outputs;

a plurality of said audio wiring circuits in the theater, each audio wiring circuit being coupled to an output from the power divider means;

separate impedance matching means connected between each of the power dividing means outputs and their respective audio wiring circuits to match the impedance of the power dividing means to the impedance of one end of the audio wiring circuits;



a plurality of lead-in wires each having one end connected to a separate automobile radio receiver antenna connection;

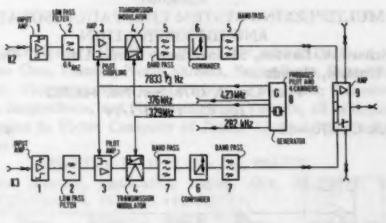
a plurality of coupling networks connecting each audio wiring circuit to at least two lead-in wires at each of a plurality of points along the audio wiring circuit; and

termination means having an impedance equal to the impedance of each audio wiring circuit connected to the other ends of the audio wiring circuits whereby said unshielded audio wiring circuits may be used as part of the transmission system to efficiently transmit the radio frequency audio portion of the motion picture.

4,209,664
CARRIER FREQUENCY SOUND TRANSMISSION SYSTEM

Hans Hochrath, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,806
Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721479
Int. Cl.[2] H04J *1/00*
U.S. Cl. 179—2.51 **3 Claims**



1. A carrier-frequency sound transmission system which has sound channels which correspond to approximately the bandwidth of three telephone channels and which are in the frequency of a basic primary frequency group of a carrier frequency communications transmission system, characterized in that the bandwidth of each sound channel is equal to about 7 kHz, a pilot tone is added to each sound channel in the audio

frequency range, each sound channel is converted into the carrier-frequency position with the use of identical quadrature modulators such as used in phase relationship single sideband systems, the carrier frequencies are selected such that for conversion to each transmission frequency all of the particular sound channel's signals being transmitted are spaced in frequency more than 1 kHz from the adjacent sound channels or pilot tones.

4,209,665

AUDIO SIGNAL TRANSLATION FOR LOUDSPEAKER AND HEADPHONE SOUND REPRODUCTION

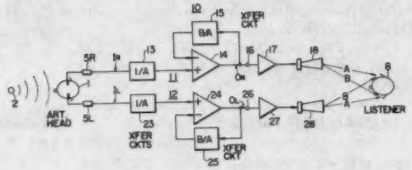
Makoto Iwahara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 29, 1978, Ser. No. 937,764

Claims priority, application Japan, Aug. 29, 1977, 52-103360; Sep. 5, 1977, 52-107082; Sep. 7, 1977, 52-106813; Sep. 7, 1977, 52-106814

Int. Cl.[2] H04R 5/04

U.S. Cl. 179—1 G **10 Claims**



1. An audio signal translator for compensating for the difference in characteristics between a multi-channel loudspeaker reproduction system and a multi-channel headphone reproduction system comprising:

a right-channel translating network receptive of one of spatially mutually correlated signals and having a transfer function 1/(A+B); and

a left-channel translating network receptive of the other of said correlated signals and having a function 1/(A+B), where A is the transfer function of acoustic paths between right- and left-channel sound reproduction sources of said multi-channel loudspeaker reproduction system and the right and left ears respectively of a listener located with respect to said sound reproduction sources and B is the transfer function of acoustic crosstalk paths between said left- and right-channel sound reproduction sources and said listener's right and left ears respectively.

4,209,666

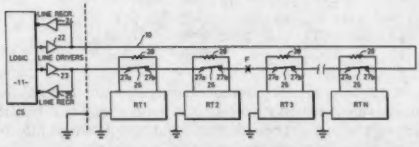
MULTIPLEXING SYSTEM LINE FAULT ISOLATION AND IDENTIFICATION

Richard A. Lawton, 51 Inverlochy Blvd., Unit #1, Thornhill, Ontario, Canada

Filed Oct. 3, 1978, Ser. No. 948,312

Int. Cl.[2] H04J 3/14

U.S. Cl. 370—13 **4 Claims**



1. A multiplexing system for two-way data transmission over a single transmission line between a control station and a plurality of remote transponder units, the control station including transmitter-receiver means for selectively addressing the transponder units and receiving response signals therefrom, wherein the transmission line is configured as a loop terminating at each end at the control station, the transmitter-receiving means being coupled to respective ends of the transmission line for transmitting address signals to the transponder units and receiving response signals therefrom, the transmission line thereby furnishing two communication paths between the control station and each transponder unit, said transmitter-receiver means including means for differentiating between response signals received via the two ends of the line, and the transponder units being distributed along the transmission line and connected thereto by respective line connection circuits each comprising:

a two-state impedance device having high and low impedance states, the devices of the respective units being serially interconnected in said line,

respective output means connected to the line on opposite sides of the impedance device for transmitting said response signals via the two communication paths,

respective input means connected to the line on opposite sides of the impedance device for receiving address signals transmitted via the two communication paths, and

logic circuit means coupled to said input means and operable in response to address signals received by both input means to switch said impedance device from a high to a low impedance state.

4,209,667

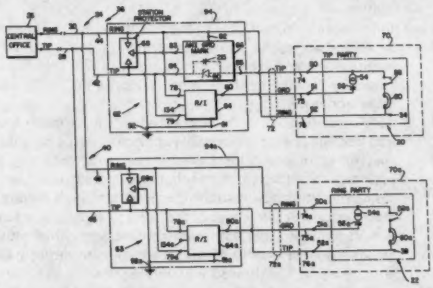
SUBSCRIBER DROP-CONNECTED CIRCUITS

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries, Inc., Lindenhurst, N.Y.

Filed Feb. 16, 1978, Ser. No. 878,657

Int. Cl.[2] H04M 13/00

U.S. Cl. 179—17 A **37 Claims**

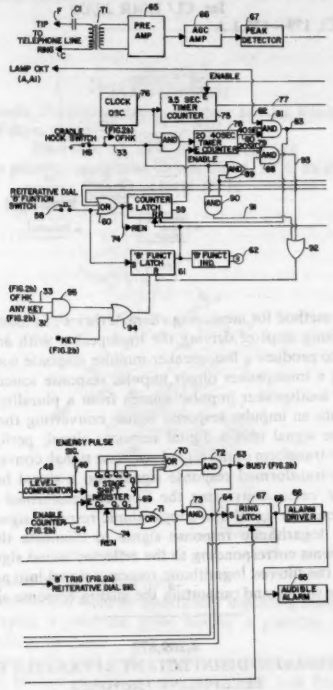


1. A station identification circuit for identifying a preselected one of two parties on a two-party line in a telephone system when a call is initiated from the pre-selected party's telephone, comprising: first means providing a ground mark which is normally disconnected from said line when said preselected party's telephone is on-hook, and second means responsive to the first momentary interruption of loop current that occurs after the flow of loop current is established by lifting the pre-selected party's telephone off-hook for causing said first means to apply the ground mark to at least the tip conductor of said line regardless of the presence or absence of negative central office battery voltage on the tip conductor.

4,209,668
TELEPHONE HAVING REITERATIVE DIALING FEATURE

Gerald J. Weinberger, Smithtown, and Stanley F. Miller, Rocky Point, both of N.Y., assignors to Utility Verification Corp., Commack, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,183
Int. Cl.[2] H04M 1/272
U.S. Cl. 179—90 B 10 Claims



1. In a telephone having a microphone, a receiver and a hook switch, reiterative dialing means comprising:

electrically actuable line seizing means;

electrically actuable dialing means including a called number storage register for dialing a desired telephone number;

means comprising an automatic gain controlled amplifier, a peak detector and a level comparator for generating energy pulse signals in response to telephone line signals having an amplitude exceeding a predetermined threshold value;

means for counting the number of said energy pulse signals occurring in a given time interval and for generating (i) a busy detected signal when said number exceeds a specified value and (ii) a ring detected signal when said number is at least one and no greater than said specified value, said counting means comprising:

a multistage shift register having an input terminal, an enable terminal, a reset terminal, at least two lower order output terminals, and a plurality of higher order output terminals;

means for coupling said energy pulse signals to said shift register input terminal;

means for applying a reset signal to said shift register reset terminal upon generation of any one of said busy detected and ring detected signals, and upon generation of a reiterative mode signal;

means for providing an enable signal to said shift register enable terminal a predetermined time period after said dialing means has dialed said desired telephone number;

a first OR gate coupled to said lower order output terminals of said shift register;

a second OR gate coupled to said higher order output terminals of said shift register; and

timing means coupled to the lowest order output terminal of said shift register for enabling the outputs of said first and second OR gates to be coupled to terminals for said ring detected and busy detected signals respectively, for said given time interval, when a signal appears at said lowest order output terminal of said shift register;

trigger means responsive to said reiterative mode signal for periodically and repetitively enabling said line seizing means and actuating said dialing means;

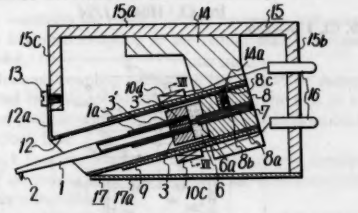
means responsive to said busy detected signal for disabling said line seizing means; and

means responsive to said ring detected signal for generating an alarm signal.

4,209,669
PICK-UP CARTRIDGE

Hideaki Hayashi, Mitaka, Japan, assignor to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 972,047
Claims priority, application Japan, Dec. 23, 1977, 52-174294[U]
Int. Cl.[2] H04R 11/12; G11B 3/02
U.S. Cl. 179—100.41 M 9 Claims



1. A pick-up cartridge comprising:

(a) a cantilever having a stylus at its one end and a magnet at its other end, said magnet being magnetized in the axial direction of said cantilever, said cantilever, said stylus and said magnet forming a vibrating system;

(b) a frame made of non-magnetic material; and

(c) a coil fixed to said frame, said frame being so located that when said magnet is moved said coil intersects a closed magnetic flux originated from said magnet.

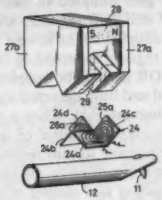
4,209,670
MOVING-COIL TYPE PICKUP CARTRIDGE

Tsuyoshi Ono, Yamato; Norio Shibata, Sagamihara; Katsuhiko Oguri, Fujisawa; Masayoshi Uchida, Yokohama; Kazuhiro Sato, Sagamihara, and Hidetoshi Sato, Yamato, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Oct. 23, 1978, Ser. No. 953,777
Claims priority, application Japan, Oct. 24, 1977, 52-141857[U]; Oct. 24, 1977, 52-141858[U]
Int. Cl.[2] H04R 9/16
U.S. Cl. 179—100.41 D 6 Claims

1. A moving-coil type pickup cartridge comprising: a cantilever provided at the free end thereof with a stylus for tracing a sound groove of a record disc; a single coil plate provided on the cantilever in a manner to vibrate in response to vibration of the stylus; and means for producing an effective magnetic field within a specific gap, said coil plate comprising a thin electrically insulating base plate and a pair of coils which are sym-

metrically disposed on opposite sides of a centerline on at least one surface of the base plate and being formed of a thin film in a spirally-shaped pattern on at least one surface of the base plate, and having at least one upright bent part defined by



bending the base plate together with a portion of each of the coils and being interposed in a freely vibratory manner within said gap of the magnetic field producing means and a mounting part integrally joined to the upright bent part and fixed to the cantilever.

4,209,671

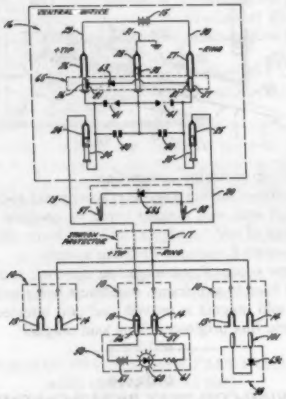
METHOD AND APPARATUS FOR TESTING THE TIP-RING POLARITY OF TELEPHONE RECEPTACLES CONNECTED IN PARALLEL TO A NON-WORKING PAIR

Joseph T. Charles, Barrington Hills, and James P. Ryan, Marengo, both of Ill., assignors to Coil Sales & Manufacturing Company, Rolling Meadows, Ill.

Division of Ser. No. 821,224, Aug. 2, 1977, Pat. No. 4,117,264. This application Jul. 20, 1978, Ser. No. 926,572

Int. Cl.[2] H04M *1/24*

U.S. Cl. 179—175 **12 Claims**



1. A method of checking whether each of a plurality of a subscriber's phone receptacles has correct tip-ring polarity at the final terminals of the receptacle, said receptacle being connected in parallel with one another across a non-working pair, said method comprising the steps of, connecting unidirectional conducting means across the tip and ring of the pair at a point other than at the receptacles to be tested with the means being poled to conduct from the ring to the tip, sequentially connecting the series combination of a battery and a light-emitting diode to the final terminals of each receptacle to be tested with the cathode of the light-emitting diode being connected to the ring terminal and with the negative terminal of the battery being connected to the tip terminal, and determining whether the light-emitting diode lights when said series combination is so connected to the final terminals of each receptacle being tested.

4,209,672

METHOD AND APPARATUS FOR MEASURING CHARACTERISTICS OF A LOUDSPEAKER

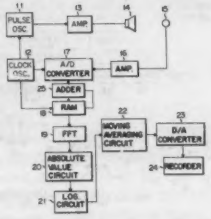
Tsuneo Nitta, Yokohama, and Masatoshi Tanaka, Koganei, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1978, Ser. No. 924,357

Claims priority, application Japan, Jul. 15, 1977, 52-84133; Jul. 15, 1977, 52-84134

Int. Cl.[2] H04R *29/00*

U.S. Cl. 179—175.1 A **6 Claims**



1. A method for measuring characteristics of a loud-speaker, comprising steps of driving the loudspeaker with an impulse signal to produce a loudspeaker impulse response sound; converting a loudspeaker direct impulse response sound and reflected loudspeaker impulse sounds from a plurality of positions into an impulse response signal; converting the impulse response signal into a digital response signal; performing a Fourier-transform of the digital response signal; converting the Fourier-transformed response signal into a signal having an absolute value; converting the Fourier-transformed absolute value response signal into a logarithmic response signal; filtering the logarithmic response signal to eliminate the signal components corresponding to the reflected sound signal; converting the filtered logarithmic response signal into an analog response signal; and outputting the analog response signal.

4,209,673

AUTOMATIC DISINFECTANT APPARATUS FOR TELEPHONE HANDSET

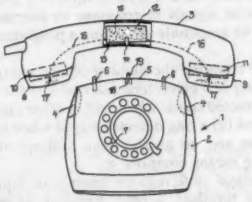
Eric Cullender, Karl-Arnold-Str. 4, 4740 Oelde, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,162

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748679

Int. Cl.[2] H04R *1/12*

U.S. Cl. 179—185 **11 Claims**



1. In combination:

a support;

an electronic sound transducer;

a housing containing said transducer at a predetermined location and liftable by the hand from a position resting on said support to a position juxtaposed with the ear or mouth of the user;

a reservoir removably mounted in said housing and containing a body of liquid disinfectant;

a conduit extending in said housing between said reservoir and said location; and

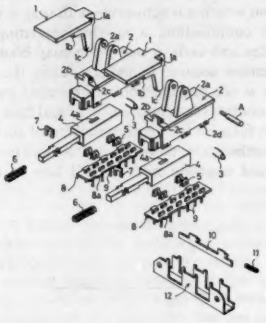
means including interengaging parts on said housing and on said support and a valve in said conduit in said housing for momentarily opening said valve and thereby feeding a predetermined quantity of said disinfectant through said conduit from said reservoir to said location on displacement of said housing from one of said positions into the other position.

4,209,674

PIANO SWITCH

Shiro Kondo, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1977, Ser. No. 809,984
Claims priority, application Japan, Jul. 2, 1976, 51-87828[U]
Int. Cl.² H01H *15/16*
U.S. Cl. 200—16 R **1 Claim**



1. A piano switch comprising:

a frame formed from an electrically insulating material and carrying a substrate plate having a plurality of fixed contacts thereon;

a sliding body held within said frame and having a projection portion extending outwardly from said frame, said sliding body being movable slidably between a first position and a second position spaced along said substrate plate and carrying a plurality of movable contacts adapted to engage selected ones of said fixed contacts in at least one of said first and second positions;

a driving lever supported pivotally at a midportion thereof to said frame, said driving lever being generally L-shaped and having an operating lever and a driving projection depending therefrom to engage said sliding body for moving it between said first and second positions during pivotal movement of said driving lever;

a first spring member having two generally parallel arm portions interconnected resiliently at end portions thereof, one of said arm portions being held to said driving lever adjacent said midportion thereof and the other of said arm portions being held to said frame whereby upon pivotal movement of said driving lever, said one arm portion will be moved in a generally arcuate path first towards said other arm portion and then away therefrom; and

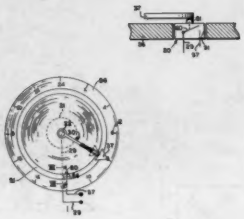
means including a second spring member operatively associated with said projecting portion of said sliding body for continually urging said sliding body into said first position, whereby said operation lever may be actuated to pivot said driving lever and slide said sliding body into said second position and said second spring member will thereafter serve to pivot said driving lever for returning said sliding body to its first position.

4,209,675

VARIABLE DURATION ELECTRIC CLOCK TIMER UNIT

Andrew P. Vitale, P.O. Box 6231, Grand Rapids, Mich. 49506

Filed Dec. 7, 1977, Ser. No. 858,260
Int. Cl.² H01H *43/00*; H05B *1/02*
U.S. Cl. 200—33 R **2 Claims**



1. A clock timer unit which may be adjustably set to control the actuation of an electrical circuit for a fixed duration of time for each period of clock operation, comprising

a clock face, marked with time indicia,

a clock unit including a motor having a rotatable output shaft,

an arm overlying the clock face and having an end coupled by a frictional coupling to the output shaft for rotation thereby,

said frictional coupling permitting the arm to be manually rotated relative to the shaft for setting the arm in a selected position with relation to the time indicia marked on the clock face,

the clock face provided with an annular groove concentric with the output shaft and located a pre-determined radial distance therefrom,

said groove located in the arc of movement of the rotatable arm so that the arm rotates over the groove,

a momentary-contact type switch having a normally open contact means operated by a depressable actuator, said switch being frictionally mounted in the groove,

the frictional mounting of the switch in the annular groove permitting the switch to be manually adjusted in the groove for adjusting locating the switch in a selected position with relation to the time indicia marked on the clock face,

said arm formed of a plurality of arm members slidably engaged with each other to permit adjustment of the radial length of said arm, and said arm fitted with means to fasten together the arm members in a selected position of radial arm length,

the free end of said arm including a shaped tip section, the transverse width of which varies along the radial axis of said tip section,

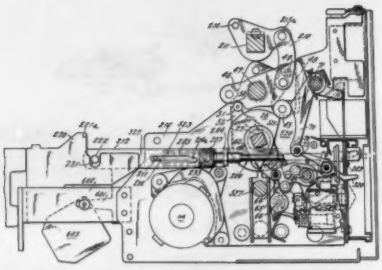
said radial length of the said arm being adjustable to allow the shaped tip section thereof to overlie the groove in such a manner that a selected width portion of the shaped tip section is circumferentially aligned with the switch actuator so as to engage the actuator to depress said actuator to close the normally open contact means of the switch when the arm is rotated into a radial orientation with the switch, and for a duration of time proportional to the transverse width of the selected portion of the shaped tip section circumferentially aligned with the depressable switch actuator.

4,209,676

COMPACT RACKING MECHANISM FOR CIRCUIT BREAKER

Challiss I. Clausing, Marlton, N.J., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 16, 1978, Ser. No. 869,588
Int. Cl.[2] H01H 9/20
U.S. Cl. 200—50 AA 6 Claims



1. Racking apparatus for moving a circuit breaker into and out of a cubicle; said cubicle having a rear portion and an opposite front end having an opening through which the circuit breaker may be drawn;

said racking apparatus comprising a hook at said rear portion of the cubicle extending toward said front end and a racking shaft on said circuit breaker; said racking shaft being mounted for rotation on said circuit breaker and being stationary longitudinally with respect to said circuit breaker;

said racking shaft extending in the direction of movement of said circuit breaker into and out of said cubicle;

said racking shaft having a threaded section and a travelling nut mounted on said threaded section;

means connected to said travelling nut for engaging said hook of said cubicle when the racking shaft is rotated in one direction, and on further rotation of said racking shaft in said one direction, drawing said racking shaft and said circuit breaker toward the rear portion of said cubicle;

rotation of said racking shaft in the opposite direction, when the circuit breaker is fully entered into said cubicle, rotation of said racking shaft in the opposite direction, causing the said means connected to said travelling nut to move against said hook and drive said racking shaft and said circuit breaker toward the front of said cubicle; and, on completion of predetermined movement of the circuit breaker toward the front of said cubicle, said means is disconnected from said hook to permit withdrawal of said circuit breaker from said cubicle;

said means connected to said travelling nut comprises at least one link extending in a vertical plane parallel to said racking shaft and pivotally mounted on said travelling nut for rotation in said plane; a pin carried by said link and extending transverse to said plane and in a direction to intercept the front of said hook when the circuit breaker is inserted into said cubicle;

said hook having a recess engageable by said pin;

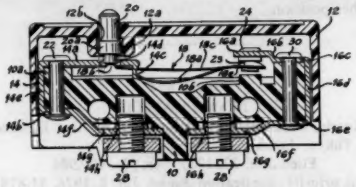
said travelling nut moving said link as the racking shaft is rotated in said one direction to move said pin out of the position to intercept the front of said hook and then into said recess of said hook, the continued rotation of said racking shaft in said one direction causing said pin in its engagement with said recess in said hook to pull said racking shaft and circuit breaker toward the rear end of said cubicle.

4,209,677

PRECISION SNAP SWITCH WITH IMPROVED ONE PIECE CONTACT SUPPORT AND TERMINAL MEMBER

Harry W. Brown, Big Bend, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 15, 1979, Ser. No. 20,824
Int. Cl.[2] H01H 5/22
U.S. Cl. 200—67 D 5 Claims



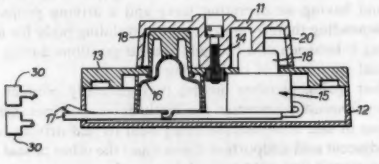
1. In a precision snap switch having a movable contact blade mounted and stressed for self movement to a normal stable position from which it is actuatable with snap action to another position, in combination, a molded insulating base having opposite sides and ends, a one piece snap blade support and terminal member secured to and straddling the opposite sides of said base at one end thereof, said member overlying a portion of said contact blade at one side of said base and providing a snap pivot fulcrum for another portion of such blade, and a one piece combination stationary contact and terminal member straddling said opposite sides of said base at the other end thereof.

4,209,678

PRESSURE SWITCH ACTUATOR

Dennis M. Hussey, Ross-on-Wye, England, assignor to The Haigh Engineering Company Limited, England

Filed Apr. 12, 1977, Ser. No. 786,875
Claims priority, application United Kingdom, Apr. 27, 1976, 16986/76
Int. Cl.[2] H01H 35/30
U.S. Cl. 200—81 R 4 Claims



1. A pressure switch actuator comprising at least one resilient compressible member, said at least one compressible member having a protectable cover located thereabout, a tube communicating with each said member and being connectable to a pressure switch, and a rotary member rotatable from a first position in which it does not affect said compressible member to a second position in which it causes compression of said compressible member, said rotary member having a cam surface which contacts said protectable cover to effect compression of said compressible member in the second position.

4,209,679

ELECTRICAL SWITCH

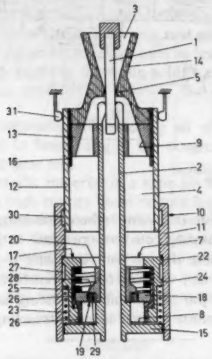
Georg Koppl, Birr; Giovanni Pedrini, and Hans Widmer, both of Zurich, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 18, 1977, Ser. No. 798,079

Claims priority, application Switzerland, May 24, 1976, 6511/76

Int. Cl.[2] H01H *33/88*

U.S. Cl. 200—148 A 20 Claims



1. In an electrical switch structure for switching an electrical circuit between its on and off positions by commutating a switchoff current from a continuous current path to an extinction path and vice versa and the breaking or restoring respectively of the continuous current path by relative movement between two contact members, wherein a first one of said contact members is located within a gas filled switch housing in a zone that is subjected to a relatively low gas pressure and the second contact member is located within a pressure chamber which can be brought into communication with said low pressure zone by way of a narrow opening in a nozzle and within which a pressure higher than that within said low pressure zone can be generated for the purpose of quenching by means of a blast action the main arc arising across said contact members during a switchoff operation, the improvement wherein said pressure chamber remains stationary in relation to said second contact member and follows movement of said second contact member during both the switchoff and switchon operations, wherein an electric system is located within said pressure chamber and comprises first and second element groups, said first group including a first arcing member and being stationary in relation to said first contact member within a first switchoff travel zone and stationary in relation to said second contact member within a second switchoff travel zone, and said second group including a second arcing member and being stationary in relation to said second contact member throughout the entire switchoff travel movement, said first and second arcing members producing between them a rotating auxiliary arc effecting a heating of the gas within said pressure chamber and raising its pressure to a level effective to blast and quench said main arc.

4,209,680

HIGH SPEED ACTUATING MECHANISM

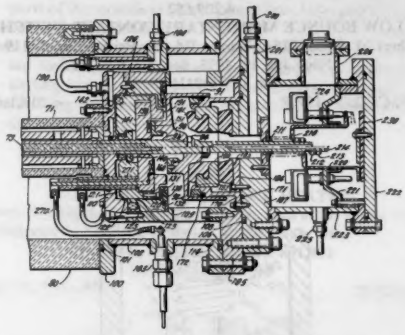
Ruben D. Garzon, Malvern, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 26, 1978, Ser. No. 919,290

Int. Cl.[2] H01H *33/82*

U.S. Cl. 200—148 R 14 Claims

10. An electrodynamic operating mechanism comprising an annular lenz coil, a movable repulsion coil movable responsive to a high-current surge in said lenz coil from a closely coupled position relative to said lenz coil to a remote position therefrom; said lenz coil and said repulsion coil being coaxial and said repulsion coil being movable along its own axis; a stationary mounting support means for said lenz coil; flexible mounting means for mounting said lenz coil on said stationary mounting support means, whereby said lenz coil has the ability to adapt itself to being seated on said repulsion coil when said repulsion coil is closely coupled thereto; and an operating shaft fixed to said repulsion coil and being operated thereby.



4,209,681

PULL SWITCH

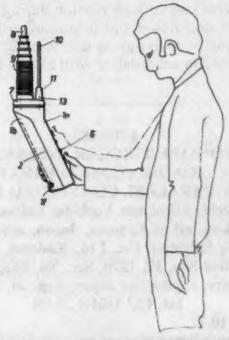
Gunter Somborn, Hagen-Vorhalle; Johannes Kluge, Wetter; Dirk Rotthaus, Bochum; Heinz Hasselmann, Hagen, and Uwe Lichtenvort, Essen, all of Fed. Rep. of Germany, assignors to DEMAG, Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,084

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756103

Int. Cl.[2] H01H *9/06*

U.S. Cl. 200—157 12 Claims



1. A pull switch for operating a hoist or the like, said pull switch suspended from said hoist, comprising

(a) a switch body;

(b) a plurality of switch operating keys on the front side of said body; the improved characterized by

(c) said switch body being the handle for said pull switch;

(d) whereby all said switch operating keys are within reach of the thumb when grasping said body;

(e) said switch body suspended from at least one support line;

(f) the connection of said support line being above the center of gravity of said switch body;

(g) said entire body being angled from the vertical axis of said support line; and

(h) said angle being ergonomically favorable for an attendant grasping said handle.

4,209,682

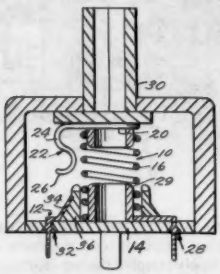
LOW BOUNCE MOMENTARY CONTACT SWITCH

Robert M. Rood, 7164 Victoria Rd., St. Paul, Minn. 55119

Filed Jul. 19, 1978, Ser. No. 926,215

Int. Cl.[2] H01H *13/52*

U.S. Cl. 200—159 R **20 Claims**



5. Apparatus for making or breaking electrical contact with low bounce switching characteristics in an electrical circuit, said apparatus comprising:

a conductive spring member including a body portion adapted for compression along a predetermined longitudinal axis and a contact arm portion, said contact arm portion extending transversely of said body portion and, responsive to compression of said body portion, traveling along a predetermined path parallel said axis of compression; and

a stationary electrical conductor, disposed adjacent said spring member to cooperate with said contact arm portion, said stationary conductor having a striking portion disposed relative said predetermined path of travel such that said contact arm portion makes wiping electrical contact with said striking portion during a predetermined portion of said travel and is continuously biased against said striking portion during said wiping, the force of said biasing being in accordance with a predetermined characteristic.

4,209,683

LOAD RESPONSIVE TRIGGER INTERVAL CONTROL FOR INDUCTION HEATING APPARATUS HAVING INVERSELY PARALLEL CONNECTED THYRISTORS

Mitsuyuki Kiuchi; Hirokazu Yoshida; Shigeo Hamaoka, and Hitoshi Wakita, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

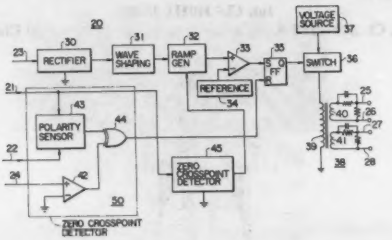
Filed Sep. 19, 1978, Ser. No. 943,792

Claims priority, application Japan, Sep. 20, 1977, 52-113503

Int. Cl.[2] H05B *25/04*

U.S. Cl. 219—10.77 **6 Claims**

1. An induction heating apparatus comprising a pair of gate-controlled switching devices each having a control electrode, first and second controlled electrodes connected in inverse parallel relationship to each other to receive power from a source of low frequency energy to generate a forward current flow in response to a gating control pulse applied to the control electrode of one of said switching devices with respect to its first controlled electrode depending on the polarity of said low frequency energy, a commutation circuit tuned to a high frequency in the ultrasonic range for generating a backward current flow which commutates through the other switching device in response to said forward current, a pulse transformer having a primary winding and a pair of secondary windings connected to the control electrode and the first controlled electrode of said switching devices respectively, first detecting means for detecting a rapid potential variation at the second controlled electrode of one of said switching devices, delay means for providing a delayed output signal after a preselected interval in response to said first detecting means, a second



detecting means for detecting when the magnitude of said backward commutating current reaches a predetermined value, and a bistable device for supplying a gating control current to said primary winding of said transformer in response to said delayed output signal and terminating said gating control current in response to said second detecting means.

4,209,684

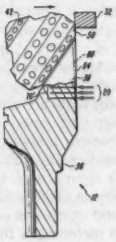
FUSION TECHNIQUE OF ASSEMBLING ROTARY DRILL BIT AND ADJUSTING GAGE OF CUTTING ELEMENTS

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Feb. 26, 1979, Ser. No. 15,170

Int. Cl.[2] B23K *15/00*; B21D *3/16*

U.S. Cl. 219—121 EM **22 Claims**



1. A method of permanently positioning cutting means on a rotary drill bit at a predetermined desired gage; said drill bit being substantially formed of metallic material and comprising an integral shank, and at least one leg portion extending longitudinally from the shank, and attachment means operatively connecting said cutting means to said leg portion; said method comprising:

applying deflecting force to said leg portion, and

fusing the metallic material in a zone on said leg portion by directing a high energy beam on said leg portion, said zone extending inward from a surface of said leg portion and extending circumferentially within at least a portion of said leg portion, said zone further being positioned axially intermediate the shank and the attachment means, said fused zone of metal creating a permanent metallurgical effect within said zone to permanently deflect the leg portion to a position at which said connected cutting means attains the predetermined gage.

8. A method of permanently positioning cutting means on a rotary drill bit at a predetermined gage as part of manufactur-

ing of the rotary drill bit; said drill bit comprising a plurality of bit segments of metallic material; each bit segment comprising a shank portion forming a part of an integral shank of the assembled drill bit, and a leg portion extending longitudinally from the shank portion, and attachment means operatively connecting said cutting means to said leg portion; each bit segment further comprising confronting faces on the shank portion adapted to abut corresponding confronting faces on another adjoining bit segment of the assembled drill bit, the abutting confronting faces of the shank portions of the bit segments defining longitudinal edges extending generally longitudinally of the drill bit axis and dome edges extending generally transversely of the drill bit axis; said method comprising:

fusing the bit segments together over at least a portion of the confronting faces by directing a high energy beam over the abutting confronting faces of the adjoining bit segments;

fusing the confronting faces along all of the longitudinal edges prior to fusing any of the confronting faces along the dome edges; and

fusing the metallic material in a zone on said leg portion by directing a high energy beam on said leg portion to create permanent metallurgical effect within said zone to permanently deflect the leg portion to a position at which said connected cutting means attains the predetermined gage, said zone being positioned axially intermediate the integral shank and the attachment means of said leg portion.

4,209,685

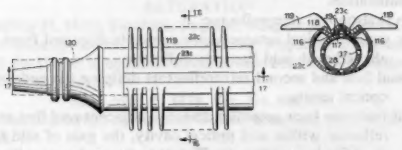
HAIR STRAIGHTENING OR WAVING MANDREL FOR USE WITH A VAPOR GENERATING CURLING IRON

Henry J. Walter, Wilton, and Raymond W. Kunz, Monroe, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 572,098, Apr. 28, 1975, Pat. No. 4,034,201. This application Apr. 18, 1977, Ser. No. 788,434

Int. Cl.[2] H05B *1/00*; A45D *1/04, 2/36*

U.S. Cl. 219—225 **3 Claims**



1. A mandrel for straightening strands of hair when moved relative to the strands and for waving the strands of hair when held stationary relative to the strands, wherein said mandrel means is adapted to be removably associated with the barrel of a hair curling iron having a heat generating means and a vapor generating means including a plurality of apertures through which heated vapor is emitted, said mandrel comprising:

means defining a hair treating surface having a sinusoidal configuration, apertures through said surface for conveying vapor to the strands of hair engaged therewith;

contact points formed on the bottom of said means defining said hair treating surface, said contact points adapted to engage a barrel of a curling iron having heat and vapor generating means for conducting heat from the barrel of the iron to said hair treating surface when said mandrel is operatively positioned on the barrel of the iron;

a sinusoidal-configured clamp positioned in opposition to said hair treating surface for urging the strands of hair into engagement with the treating surface, said clamp having a sinusoidal configuration which complements the sinusoidal configuration of the treating surface;

a bottom portion which cooperates with and is spaced away from the bottom of said means defining said hair treating surface to define therewith a continuous, unobstructed vapor chamber beneath said hair treating surface, said chamber being substantially coextensive with said hair treating surface and in communication with the apertures in said surface, said chamber being adapted to slidably receive the barrel of a curling iron having a heat and vapor generating means and to receive vapor from the vapor generating means of the curling iron, said apertures through said surface being arranged to convey vapor to all parts of the strands of hair between the clamp and the hair treating surface; and

said bottom portion and the contact points of said hair treating surface adapted to frictionally engage the barrel of a curling iron having heat and vapor generating means for retaining the mandrel means in place on the barrel of the curling iron.

4,209,686

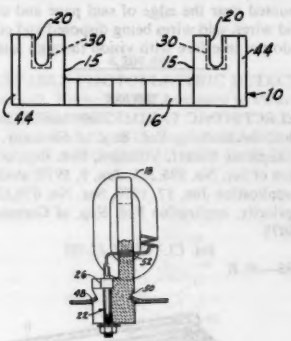
ELECTRICAL RESISTANCE HEATER

Henry J. Moglia, and Carlo B. Sonnino, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 27, 1978, Ser. No. 881,902

Int. Cl.[2] H05B *3/00*

U.S. Cl. 219—375 **10 Claims**



1. A unitary ceramic support member for a helically wound electrical resistance heater coil comprising: a flat plate-like coil support portion having front and rear sides, opposite parallel and coextending edges, and an integral leg extending perpendicularly in the plane of said flat coil support portion from each end of one of said edges for mounting said member on support structure and for spacing said flat coil support portion therefrom, said edges of said coil support portion each having a plurality of spaced recesses therein for receiving and retaining transversely extending portions of a heater coil when wrapped around said flat coil support portion, and said legs being thicker front to rear than said flat coil support portion with each having a portion thereof offset from one side of said coil support portion, and each of said legs having a groove in said offset portion thereof extending longitudinally the length thereof for receiving a rigid terminal post.

4,209,687

LAMINATED TRANSPARENT PANE

Walther Bethge, and Dietrich Bethge, both of Riehen, Switzerland, assignors to Therglas GmbH für Flächenheizung, Riehen, Switzerland

Filed Jan. 18, 1978, Ser. No. 870,416

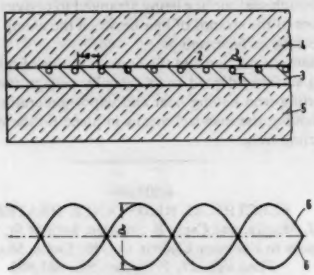
Claims priority, application Switzerland, Jan. 27, 1977, 1044/77

Int. Cl.[2] H05B *3/06*

U.S. Cl. 219—522 **9 Claims**

1. A laminated transparent pane comprising at least two laminations and an intermediate film between the laminations, said laminations and said film being electrically non-conductive, a plurality of electrical heating wires, each in the form of

a three dimensional spiral, embedded in the intermediate film, said heating wires each comprising several individual wires which are helically wound about the same axis but are offset



axially with respect to one another, and electrical connection means mounted near the edge of said pane and connected to each of said wires, said wires being disposed and configured so that they do not interfere with vision through said pane.

4,209,688

ELECTRONIC TAXIMETER ASSEMBLY

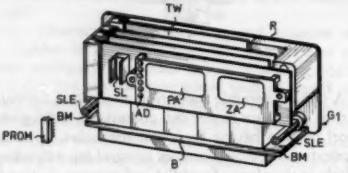
Heinz Kelch, Buchenberg, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Continuation of Ser. No. 585,293, Jun. 9, 1975, abandoned. This application Jan. 17, 1978, Ser. No. 870,130

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1974, 2428075

Int. Cl.[2] G07B *13/00*

U.S. Cl. 235—30 R **6 Claims**



1. An electronic taximeter assembly consisting essentially of a first modular section and a second modular section detachably secured to said first modular section, said modular sections being structured to form for said assembly an external enclosure consisting of two constituent parts, one of said parts being structured as part of said first modular section and the other of said parts being structured as part of said second modular section, said external enclosure comprising a front wall, a side wall, a rear wall and a bottom wall, with at least one of said rear wall and said bottom wall being formed as part of said first modular section, and with at least said front wall and said side wall being formed as part of said second modular section, said assembly further comprising electronic taximeter computation apparatus including electronic elements for performing basic taximeter computing functions mounted as a part of said first modular section; means for nondetachably securing said first modular section in operative position within a taxi through connection with at least one of said rear wall and said bottom wall; socket means located in at least one of said rear wall and said bottom wall for enabling connection of said electronic computation apparatus with electrical energy supply means and with input means for supply to said computation apparatus of information forming the basis for performance of said basic taximeter computing functions by said electronic taximeter computation apparatus; manually operable actuating means nondetachably secured in at least one of said front wall and said side wall of said second modular section in operative arrangement for enabling desired actuation of said electronic taximeter computation apparatus; and detachable fastener means for detachably securing said second modular section in operative engagement on said first modular section with said actuating means positioned to enable actuation of said computation apparatus; said second modular section being structured to be removed as a unit from said first modular section with said actuating means remaining mounted on said second modular section so that they may be returned to operative position relative to said computation apparatus merely by reattachment of said second section to said first section; the overall arrangement of said assembly being such that removal of said second section from said first section operates to permit access to said electronic taximeter computation apparatus to enable servicing thereof without further disassembly of parts.

4,209,689

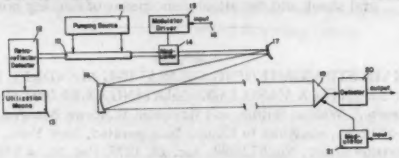
LASER SECURE COMMUNICATIONS SYSTEM

Gary J. Linford, Gardena; Eugene R. Peressini, Torrance, and Walter R. Sooy, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 4, 1969, Ser. No. 831,276

Int. Cl.[2] H04B *9/00*; H01S *3/00*

U.S. Cl. 455—609 **7 Claims**



1. A secure laser communications system comprising, in combination:

a first optical retroreflector;

a second optical retroreflector remotely disposed from and aligned with said first retroreflector;

said first and second retroreflectors defining the ends of an optical cavity;

at least one laser amplifier disposed adjacent said first retroreflector within said optical cavity, the gain of said laser amplifier being at least sufficient to sustain laser oscillation within said optical cavity;

a first modulator coupled to said laser amplifier, said first modulator controlling the output of said laser amplifier in response to a first modulating signal;

a second modulator coupled to said second retroreflector, said second modulator controlling the optical reflection coefficient of said second retroreflector in response to a second modulating signal; and

first and second photodetectors, said first and second photodetectors being coupled to said first and second retroreflectors respectively.

4,209,690

INDUCED ABSORPTION ELEMENTS

Peter M. Rentzepis, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

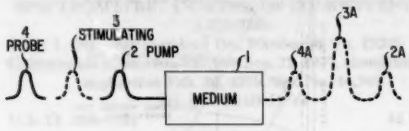
Continuation of Ser. No. 633,127, Nov. 18, 1975, abandoned. This application May 25, 1978, Ser. No. 909,530

Int. Cl.[2] H01S *3/10*

U.S. Cl. 455—611 **33 Claims**

1. In a communication system an apparatus including an element comprising an active medium, said active medium being characterized by quantum mechanical energy levels, together with first excitation means for exciting said active medium so as to increase population at at least one elevated quantum mechanical energy level to a population above that

evidenced by the said medium when the medium is at thermodynamic equilibrium, the increased population at the said elevated level resulting in a "metastable state", said metastable state having an associated population lifetime defined as the time duration of such increased population at such metastable state with such defined time terminating upon spontaneous relaxation, characterized in that said apparatus includes a second means designated "associated radiation means" for making associated radiation incident upon said element, said associated radiation including energy of a quantum level to further excite the said medium from the metastable state to a first higher



excited state whereby at least a portion of such associated radiation is absorbed with an associated extinction ratio greater than 99%, together with third means reponsive to a change in radiation amplitude of said associated radiation due to absorption resulting from excitation from said metastable state to the said first higher excited state, the apparatus further characterized in that the population of said metastable state varies in time over a time period of approximately 10 picoseconds in a manner representative of intelligence, whereby the said associated radiation is altered in a manner representative of the said intelligence, said intelligence being thereby replicated at the said third means.

4,209,691

NIGHT VISION SYSTEM COMPRISING A LIGHT SOURCE AND IMAGE INTENSIFIER POWERED IN ALTERATION

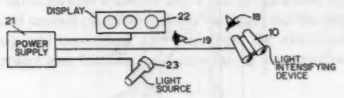
Geoffrey H. Hunt, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1978, Ser. No. 884,073

Claims priority, application United Kingdom, Mar. 8, 1977, 9679/77

Int. Cl.² H01J *31/50*

U.S. Cl. 250—213 VT **2 Claims**



1. A night vision system for use by at least a first observer for viewing objects in the near field by means of artificial light and for use by a second observer for viewing objects in the far field by means of a light intensifying direct vision device which would have its efficacy reduced by the presence of artificial light, said system comprising artificial light producing means for use by said first observer, light intensifying direct vision means for use by said second observer, and means for rendering said artificial light producing means and said light intensifying direct vision means respectively operative substantially during alternate intervals of time, said last-named means comprising power supply means coupled to both said artificial light producing means and to said light intensifying direct vision means, said power supply means being operative to supply a train of spaced power pulses to said artificial light producing means at a repetition rate greater than the flicker frequency, said artificial light producing means being responsive to the presence and absence of said power pulses whereby said artificial light producing means is illuminated in response to the occurrence of each such power pulse and is extinguished in response to the termination of each such power pulse, and said light intensifying direct vision means including means responsive to the presence and absence of said pulses of power for rendering said light intensifying direct vision means inoperative when said artificial light producing means is illuminated and for rendering said light intensifying direct vision means operative when said artifical light producing means is extinguished, said light intensifying direct vision means being rendered operative marginally before the termination of each power pulse supplied to said artificial light producing means.

4,209,692

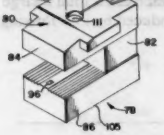
ADJUSTABLE PHOTOELECTRIC DETECTOR

William Hudspeth, Norwell, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 19, 1977, Ser. No. 861,642

Int. Cl.² F16D *1/12*; G01D *5/32*; G03B *7/10*; H01J *5/02*

U.S. Cl. 250—239 **2 Claims**



1. In a pulse generating system including an encoder with alternate light passing and light blocking portions movable in a predetermined path and a detector unit having a housing carrying a light emitting and a light sensitive element disposed on opposite sides of said encoder and on a first axis intersecting said predetermined path, the improvement comprising:

said housing including a circular recess and a plurality of serrations located in a given exterior surface normal to said first axis, said recess being spaced from said first axis so as to provide a pivot axis of said housing spaced from the axis of said elements;

means for mounting said detector unit for pivotal movement about said pivot axis, said mounting means including a bearing surface for supporting the surface of said detector unit opposite said given surface, a stanchion projecting from said bearing surface, a bracket cantilevered from the distal end of said stanchion, and a depending post located at the distal end of said bracket and engageable with said recess to retain said unit on said bearing surface and permit pivotal motion thereof; and

resilient retention means for holding the detector unit in a pre-established angular orientation about said pivot axis to calibrate the location of said detector unit relative to said encoder, said retention means including a resilient tab cantilevered from said distal end of said stanchion with a blade-like formation depending therefrom for engagement with said serrations.

4,209,693

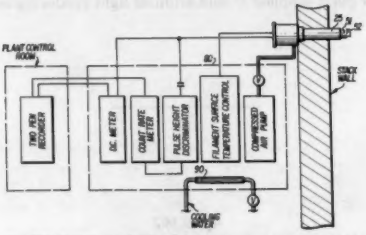
SURFACE IONIZATION MONITOR FOR PARTICULATES AND METHOD

Wade L. Fite, and Richard L. Myers, both of Pittsburgh, Pa., assignors to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 711,231, Aug. 3, 1976, Pat. No. 4,093,855, which is a continuation of Ser. No. 465,163, Apr. 29, 1974, Pat. No. 3,973,121, which is a continuation-in-part of Ser. No. 319,442, Dec. 29, 1972, Pat. No. 3,808,433. This application Aug. 2, 1978, Ser. No. 930,360

Int. Cl.[2] **G01N** *27/78*

U.S. Cl. 250—251 **16 Claims**



1. A method of monitoring particulates borne in a surrounding moving gaseous medium within a stack or duct which is at least at about atmospheric pressure which comprises the interception of said particulates in situ by a hot filament extending therein, causing said particulates to decompose and produce bursts of ions, collecting said ions by a nearby electrode, providing a bias potential differential between said electrode and said filament of about one hundred or more volts, counting said bursts having a predetermined total charge and measuring the electrical current produced by ions flowing from said filament to said electrode.

4,209,694

ASSAYING FOR URANIUM-BEARING ORE

William R. Mills, Jr., Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 868,948, Jan. 12, 1978, which is a continuation-in-part of Ser. No. 759,929, Jan. 17, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,843

Int. Cl.[2] **G01V** *5/00*

U.S. Cl. 250—265 **16 Claims**

1. A method for assaying for uranium-bearing ore in the formations traversed by a borehole, comprising the steps of:

(a) cyclically irradiating a known concentration of uranium-bearing ore with bursts of fast neutrons,

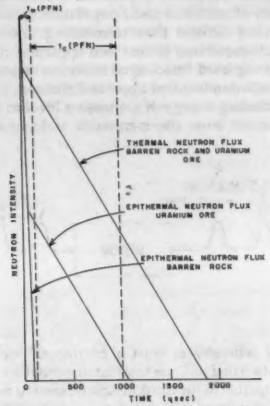
(b) determining the ratio of epithermal to thermal neutron fluxes in said known concentration of ore in response to each irradiation of step (a),

(c) determining the ratio of epithermal to thermal neutron fluxes during the time period that prompt fission neutrons are produced in said known concentration of ore in response to each irradiation of step (a),

(d) cyclically irradiating an unknown concentration of uranium-bearing ore in the formations surrounding the borehole with bursts of fast neutrons,

(e) determining the ratio of epithermal to thermal neutron fluxes in said unknown concentration of uranium-bearing ore in response to each irradiation of step (d), and

(f) determining the ratio of epithermal to thermal neutron fluxes during the time period that prompt fission neutrons



are produced in said unknown concentrations of uranium-bearing ore in response to each irradiation of step (d).

4,209,695

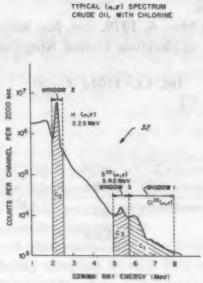
DETECTION OF IMPURITIES IN FLUID FLOWING IN REFINERY PIPELINE OR OIL PRODUCTION OPERATIONS USING NUCLEAR TECHNIQUES

Dan M. Arnold; Harold E. Peelman; Obie M. Langford; Hans J. Paap, and Irwin R. Supernaw, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 748,072, Dec. 6, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 872,981

Int. Cl.[2] **G01V** *5/00*

U.S. Cl. 250—270 **23 Claims**



1. A method for analysis of a fluid flowing in a conduit to determine the presence of low concentrations of salt water and gas in the fluid comprising the steps of:

(a) bombarding the fluid with fast neutrons, which are slowed down and thereafter engage in thermal neutron capture reactions with materials in the fluid;

(b) obtaining gamma ray energy spectra of the materials in response to the capture of thermal neutrons by the materials in the fluid;

(c) obtaining a measure of the concentration of chlorine in the fluid from the gamma ray energy spectra;

(d) obtaining from the measure of the concentration of chlorine a measure of the concentration of salt water in the fluid;

(e) obtaining a measure of the concentration of sulfur in the fluid from the gamma ray spectra simultaneously with said step of obtaining a measure of the concentration of chlorine; and

(f) obtaining from the measure of the concentration of chlorine a measure of the percent gas content of the fluid.

4,209,696

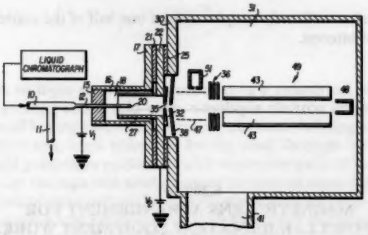
METHODS AND APPARATUS FOR MASS SPECTROMETRIC ANALYSIS OF CONSTITUENTS IN LIQUIDS

Wade L. Fite, 305 Pasadena Dr., Pittsburgh, Pa. 15215

Continuation of Ser. No. 835,160, Sep. 21, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,948

Int. Cl.[2] B01D *59/44*

U.S. Cl. 250—281 **42 Claims**



1. A method of obtaining a mass spectrometric analysis of the constituents of liquids wherein electrically charged droplets of the liquid are formed by an electrospray process, the method comprising the step of producing said droplets by causing the liquid to be analyzed to flow through a capillary tube of small bore which is placed at a high electrical potential whereby said droplets emerge from said tube in an electrically charged condition in a small chamber maintaining the pressure of the gas therein sufficiently high effectively to cause the droplets to become suspended in said gas for a sufficient period of time that said charged droplets completely evaporate leaving substantially only gaseous molecules and ions of the constituents of the liquid and ions formed by ion-molecule reactions, providing a pinhole aperture in said small chamber and causing gaseous molecules and ions in said small chamber to flow through said aperture into a second chamber by maintaining said second chamber at high vacuum, and the step of accelerating and separating said ions from the electrically neutral molecules and focusing said ions into a mass-to-charge analyzer.

4,209,697

METHOD FOR PRODUCING SELECTED MASS SPECTRA

Gerhard Renner, Gräfeling, and Eberhard Unsöld, Munich, both of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH München, Neuherberg, Fed. Rep. of Germany

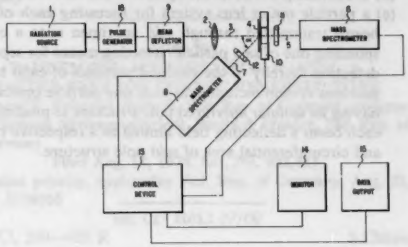
Filed Jan. 26, 1978, Ser. No. 872,572

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703047

Int. Cl.[2] B01D *59/44;* **H01J** *39/40*

U.S. Cl. 250—282 **5 Claims**

1. In a method for producing selected mass spectra by directing electromagnetic radiation through an optical system onto sample material for vaporization, destruction, excitation and-/or ionization in the microrange, setting the expanse of the irradiated region of the sample by selection of the energy density of the radiation, and detecting the released particles, the improvement comprising varying the radiation power



density for producing mass spectra having respectively different proportions of atom and molecule spectra.

4,209,698

TRANSMISSION-TYPE CHARGED PARTICLE BEAM APPARATUS

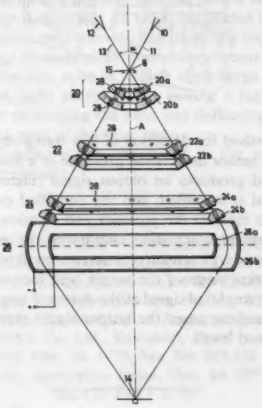
Walter Hoppe, Lochham, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Continuation of Ser. No. 807,695, Jun. 17, 1977, abandoned, which is a continuation of Ser. No. 673,574, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 499,242, Aug. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 319,106, Dec. 27, 1972, abandoned. This application Dec. 28, 1978, Ser. No. 973,972

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1971, 2165089

Int. Cl.[2] G01M *23/00*

U.S. Cl. 250—311 **11 Claims**



1. A transmission-type charged particle beam apparatus comprising a vacuum envelope enclosing:

(a) first means, including at least ten individual charged particle sources, for separately producing at least ten individual charged particle beams;

(b) second means for supporting a specimen to be investigated;

(c) third means for projecting each of said beams along a different beam path through a predetermined region of the specimen supported by said second means, said beam paths collectively converging about a rotational axis of symmetry of said apparatus and at equal angles of at least

30° to said axis so as to intersect at an apex lying within said predetermined region of said specimen;

(d) individual particle detecting means for each beam; and

(e) a particle optics lens system for focussing each of said beams transmitted through said specimen onto a corresponding one of said particle detecting means for separate detection thereby of the charged particles of each beam, said lens system including at least one particle optics lens having an annular apertured pole structure to produce for each beam a deflecting field limited to a respective radial and circumferential area of said pole structure.

4,209,699

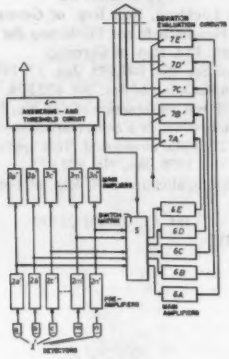
INFRA-RED DETECTION SYSTEM FOR DETECTING LOW-FLYING OBJECTS

Günter Pusch, Bannholzweg 12, 6903 Neckargemünd-Dilsberg, Fed. Rep. of Germany

Filed Sep. 1, 1977, Ser. No. 829,676

Int. Cl.² G01J *1/00*

U.S. Cl. 250—340 **7 Claims**



1. In a method for detection of low flying objects in which an infra-red sensor detects the presence of a low-flying object in space and produces an output signal related thereto, the output signal is amplified, and the amplified output signal is employed to indicate the presence and location of the target, the improvement comprising amplifying the signal received from the sensor with a relatively narrow band width during an initial detection stage of the target, and increasing the band width of the amplified signal as the detected target approaches the sensor and increases the output signal thereof beyond a pre-determined level.

4,209,700

NUCLEAR TRANSVERSE SECTIONAL BRAIN FUNCTION IMAGER

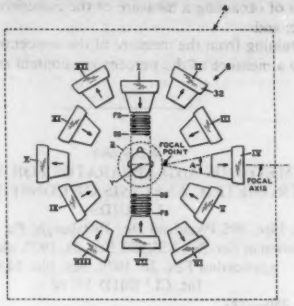
Hugh F. Stoddart, Groton, Mass., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,894

Int. Cl.² G01N *23/00*

U.S. Cl. 250—363 S **10 Claims**

1. A transverse radionuclide scan field imaging apparatus comprising a plurality of highly focused closely laterally adjacent collimators arranged inwardly focused in an array which surrounds a scan field of interest, each collimator being moveable relative to its adjacent collimator; and means for imparting travel to said collimators such that the focal point of each said collimator uniformly samples at least one half of the entire scan field of interest.



4,209,701

MAGNETIC LENS ARRANGEMENT FOR CORPUSCULAR RADIATION EQUIPMENT WORKING UNDER A VACUUM

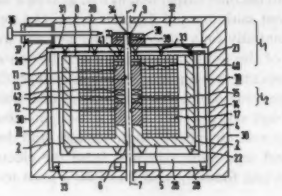
Isolde Dietrich; Fred Fox, both of Munich; Erwin Knapek, Unterhaching; Karl Nachtrieb, Munich; Reinhard Weyl, Assling; Helmut Zerbst, Munich, and Guy LeFranc, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,894

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1977, 2731458

Int. Cl.² H01J *37/00*

U.S. Cl. 250—396 ML **7 Claims**



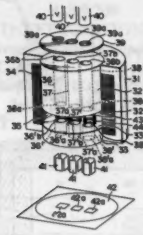
1. In a magnetic lens arrangement for use in corpuscular radiation equipment working under a vacuum, said lens arrangement including a vacuum chamber to receive an object to be examined and at least one current-carrying lens coil winding which is enclosed by a superconductive shielding device and is disposed around two superconductive, hollow cylindrical shielding parts disposed coaxial to the beam guidance axis for the lens arrangement, the shielding parts being spaced one behind the other as viewed in the beam guidance direction with a gap of predetermined gap width formed between their adjacent faces, the improvement comprising, the shielding device being of cup shaped design and the vacuum chamber to receive the object to be examined being located in front of the open side of the cup shaped shielding device, and of the face of the first shielding part facing away from the gap, as viewed in the beam direction, said vacuum chamber being maintained at a temperature which is approximately room temperature.

4,209,702

MULTIPLE ELECTRON LENS

Shogo Shirai, Yokohama, and Akira Onoguchi, Chofu, both of Japan, assignors to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Jul. 13, 1978, Ser. No. 924,249
Claims priority, application Japan, Jul. 25, 1977, 52-88962
Int. Cl.[2] G21K 1/08
U.S. Cl. 250—396 ML 2 Claims



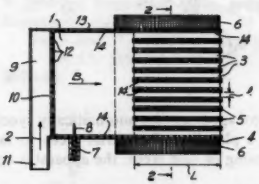
1. A multiple electron lens comprising a cylindrical yoke, a main exciting coil in said yoke, a multiple electron lens in said main coil having two axially spaced polepieces defining a space therebetween, each polepiece having axial through openings and said polepieces positioned with respective pairs of through openings through said axially spaced polepieces aligned axially and each aligned pair of through openings defining an electron beam path, a sole anode disposed coaxially with the polepieces spaced axially therefrom and having openings corresponding in number to the openings in the polepieces and aligned therewith, for each beam path an auxiliary exciting coil in said space coaxial with a corresponding beam path, for each beam path a stigmator coaxial with a corresponding auxiliary coil and adjacent thereto.

4,209,703

SOURCE FOR PLASMA OF LARGE TRANSVERSE SECTION AND CONSTITUTING AN ION ACCELERATOR

Jean L. Delcroix, 37 rue des Longs Pres, 92100 Boulogne, and Jean M. Peyraud, L'"Agrianthe", 06230 Villefranche, both of France

Filed Oct. 1, 1974, Ser. No. 512,316
Claims priority, application France, Oct. 2, 1973, 73 35098
Int. Cl.[2] H01J 27/00; F03H 3/00; H05H 1/00
U.S. Cl. 250—423 R 9 Claims



1. A plasma source constituting an ion accelerator comprising a chamber, means for introducing a gas into said chamber, means for producing a plasma from the gas, an assembly of a plurality of parallel elongated channels having inlets communicating with the interior of said chamber, each channel having a length greater than its minimum transverse dimension, the latter being much smaller than the mean free path of the neutral particles constituting the utilized gas, the transverse dimension of said channels being of a size to prevent passage of neutral particles while allowing passage of the charged particles produced by ionization in said chamber and means for producing a magnetic induction disposed around the assembly of channels such that the magnetic induction is parallel to said channels

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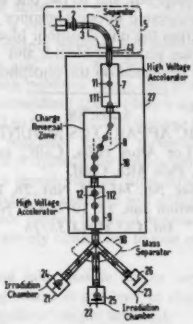
4,209,704

TANDEM ION ACCELERATION HAVING A MATTER-FREE ION CHARGE REVERSED ZONE

Eberhard F. Krimmel, Pullach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,411
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738405
Int. Cl.[2] H01J 27/00
U.S. Cl. 250—423 R 9 Claims



1. A tandem ion accelerator comprising:

(a) an ion source and separator;

(b) a high pressure enclosure having a first high voltage acceleration means, a charge reversal means, and a second high voltage accelerator all series connected in the pressure enclosure and receiving ions from the ion source;

(c) said charge reversal means comprising means for providing a matter-free zone in which the charge reversal is carried out, light source means having a high luminous density for recharging the ions, and deflecting means for deflecting a path of the ions; and

(d) mass separator means connected to the second high voltage accelerator.

4,209,705

IMAGE INTENSIFIER WHOSE INPUT SCREEN PHOSPHOR LAYER IS DIVIDED INTO LIGHT GUIDING MOSAIC BLOCKS BY METAL PROTRUSIONS

Hiroshi Washida, Kawasaki; Tomiya Sonoda, Machida, and Yuzo Nakamura, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co, Ltd., Kawasaki, Japan

Filed Mar. 10, 1978, Ser. No. 885,121
Claims priority, application Japan, Mar. 14, 1977, 52-27106
Int. Cl.[2] G01T 1/20
U.S. Cl. 250—486 13 Claims

1. An image intensifier comprising an input screen for converting a radiation image into an electron image;

an electro-optical system for accelerating and focusing the electron image and an output screen for converting the accelerated and focused electron image into a visible image, wherein the input screen comprises:

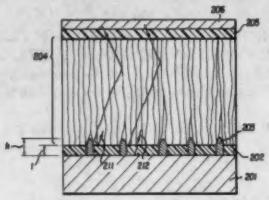
a substrate;

an insulator layer formed on one surface of the substrate and having a plurality of grooves dividing the insulator layer into a plurality of mosaic blocks;

a phosphor layer deposited on the insulator layer, the upper surface of the phosphor layer being even;

a plurality of protruding dividing members disposed at the

bottoms of the grooves in the insulator layer for causing the phosphor layer when deposited on the insulator layer to divide without cracking into a plurality of phosphor blocks corresponding to the mosaic blocks and extending



substantially perpendicular to the one surface of the substrate, light generated in one phosphor block being scattered only within the one phosphor block and not travelling to the other phosphor blocks; and

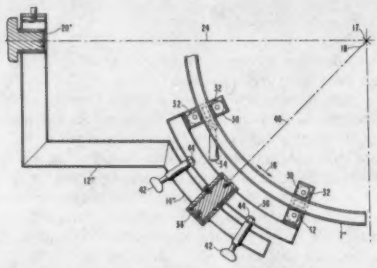
a photocathode deposited on the phosphor layer.

4,209,706

FLUOROSCOPIC APPARATUS MOUNTING FIXTURE

Craig S. Nunan, Los Altos Hills, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 745,154, Nov. 26, 1976, abandoned.
This application Jun. 12, 1978, Ser. No. 915,086
Int. Cl.[2] H01J *35/16*
U.S. Cl. 250—490 **7 Claims**



1. An apparatus for examining an object, the apparatus comprising: a base member, a cantilever arm rotatably connected to said base, a retaining member said cantilever arm, a substantially C-shaped member rotatable within said retaining member, a source for creating an examining beam located at approximately one end of said C-shaped member, and a means for detecting said beam located at approximately the other end of said C-shaped member, said source and detecting means being positioned in opposing fashion thereby to form a beam vector in which said object may be imaged, said rotatable connections being rotatable one with respect to the others such that said object located within said beam vector can be totally spherically solid angle imaged without movement of said base or the object.

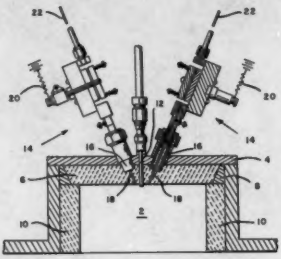
4,209,707

WIRE GUIDE PLATE FOR PRODUCTION OF GASEOUS METAL HALIDES

Robert H. Phipps, Savannah, Ga., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 6, 1978, Ser. No. 893,923
Int. Cl.[2] B01K *1/00*; C01F *7/56*
U.S. Cl. 250—544 **7 Claims**

1. An improved consumable wire electrode-atomizer assembly for producing gaseous metal halides in a reaction chamber having a cover plate, two wire electrode feeding means in converging relationship extending through said cover plate and having sealing means therearound, a gas feed means for feeding an atomizing gas into said reaction chamber, located between said wire electrode feeding means and extending through said cover plate, a pair of wire electrode contact means each arranged to maintain continuous electrical contact with a consumable wire electrode which is fed through said wire electrode feeding means, to form an arc between the consumable electrodes in said reaction chamber in the presence of said atomizing gas, the improvement comprising a wire



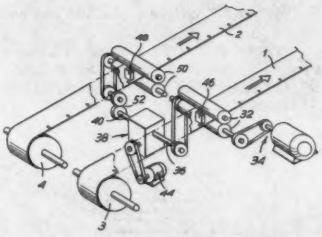
guide plate prepared from an insulating material positioned inwardly of the reaction chamber, abutting and substantially completely covering said cover plate and having an aperture through which said gas feed means extends into said reaction chamber, and having apertures into which said wire electrode feeding means are placed and terminates, and apertures contained therein at the terminal ends of said feeding means through which said consumable wire electrodes enter said reaction chamber.

4,209,708

WEB-FEED CONTROL APPARATUS

Grazia Galimberti nee Sestini, Via Pancaldo 4, Milan, Italy

Filed Apr. 25, 1978, Ser. No. 899,858
Claims priority, application Italy, Apr. 28, 1977, 9424 A/77
Int. Cl.[2] G01N *21/30*
U.S. Cl. 250—548 **7 Claims**



1. Web-feed control apparatus for automatically synchronising the feeding of a plurality of material webs to facilitate simultaneous processing of said webs, the apparatus comprising

web feed means for advancing the webs along respective paths;

respective optical sensors juxtaposed each web path and arranged to output respective signals on sensing predetermined marks on their corresponding webs, non-simultaneous occurence of the sensor output signals corresponding to the advance of a said mark on one said web relative to corresponding mark or marks on the, or the other, webs;

web feed rate control means operative upon non-simultaneous occurence of the sensor output signals to vary the relative feed rates of the webs with respect to each other

until the said signals occur together indicating that said advance has been annulled; and

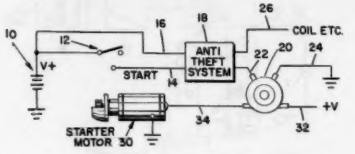
said web feed means including respective pairs of drive rollers for each web and said feed rate control means includes epicyclic gearing coupling said drive roller pairs, said epicyclic gearing providing a speed differential between said drive roller pairs upon non-simultaneous occurance of said sensor output signals and no speed differential when said signals are simultaneous.

4,209,709

ANTI-THEFT IGNITION SYSTEM

Arnold L. Betton, Reseda, Calif., assignor to BBJ Laboratories, Newport Beach, Calif.

Filed Sep. 5, 1978, Ser. No. 939,784
Int. Cl.[2] B60R *25/00*
U.S. Cl. 307—10 AT **44 Claims**



1. In a system for a vehicle having a switch means which is key operable from a first position to a second position for energizing the electrical system of the motor means of said vehicle, the combination comprising:

means for detecting momentary actuations of said switch means for generating serial pulses;

means operable in response to the last pulse of a number of sequentially entered pulses for indicating completion of a word;

means for providing a vehicle condition-sensing signal;

means for providing a plurality of words indicative of a given code;

means for enabling an electrical component of the vehicle for permitting the starting of the motor means; and

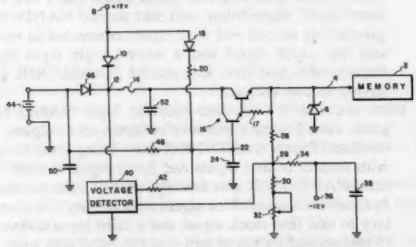
means responsive to said signal and to proper sequential entry of at least a portion of said plurality of words for setting said system for permitting subsequent energizing said enabling means only in response to proper sequential entry of all of said words for operating said motor means.

4,209,710

BATTERY BACK-UP REGULATOR

William T. Quarton, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 27, 1978, Ser. No. 919,699
Int. Cl.[2] H02J *9/06*; H03K *1/14*
U.S. Cl. 307—66 **6 Claims**



1. A voltage regulator circuit comprising:

a primary source of voltage to be regulated,

a back-up source of voltage to be regulated,

said primary source and said back-up source being connected to a common junction through mutual isolation means,

a regulator output terminal,

a series connected regulating means connected between said common junction and said regulator output terminal,

an output voltage sensing circuit connected to said regulator output terminal, said output voltage sensing circuit including a voltage detector module having an input terminal and output terminal and characterized in having a negligible current drain, said voltage detector module being further characterized in having a predetermined threshold voltage characteristic at said module input terminal at which threshold voltage the signal condition at said module output terminal changes between a conductive and nonconductive state, said output voltage sensing circuit also including a voltage dividing network connected to said regulator output terminal and having an intermediate connection to said input terminal of said module, said voltage dividing network being characterized in providing at said intermediate connection a signal voltage substantially equal to said threshold voltage for a first voltage level at said regulator output terminal whenever said primary source is operatively connected to said common junction and a signal voltage substantially equal to said threshold voltage for a second and different voltage level at said regulator output terminal whenever said back-up source is operatively connected to said common junction, and

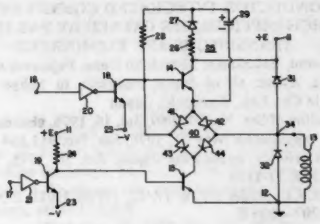
means connecting said module output terminal to control said regulating means in response to changes in said voltage at said regulator output terminal.

4,209,711

TRANSISTOR POWER CIRCUIT WITH PREVENTIVE DIODE BRIDGE

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1978, Ser. No. 930,907
Int. Cl.[2] H02M *7/48*
U.S. Cl. 307—104 **28 Claims**



1. In a circuit wherein chopped current is supplied to an inductive load from a DC source that is switched by first and second transistors having emitter-collector paths stacked between terminals of the source, the transistors having bases driven so that current can be supplied to the load from the source through the emitter-collector path of the first transistor during a first interval while the emitter-collector path of the second transistor is cut off and the current can flow from the load through the emitter-collector path of the second transistor during a second interval while the emitter-collector path of the first transistor is cut off, the improvement comprising: a bridge circuit connected between the emitter-collector paths to the load, and to a bias circuit for two of the transistors for preventing current flow through the emitter-collector path of one of the transistors while the other transistor is conducting regard-

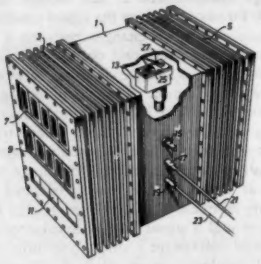
less of tendencies of the transistors to be simultaneously rendered in a conducting state.

4,209,712

ARRANGEMENT FOR INSTALLING ELECTRIC OR ELECTRONIC EQUIPMENT IN APPARATUSES FOR DISPENSING FUEL

Jan Westlund, Akersberga, Sweden, assignor to Auto Tank AB, Bromma, Sweden

Filed Jun. 16, 1978, Ser. No. 916,008
Claims priority, application Sweden, Jun. 16, 1977, 7707017
Int. Cl.² H01H *35/24*
U.S. Cl. 307—118 **6 Claims**



1. Apparatus for improving the safety of the installation of electrical and electronic equipment in a device for dispensing fuel, comprising:

a pressure tight casing for housing electrical and electronic equipment;

means for establishing a gas pressure in the interior of said casing; and

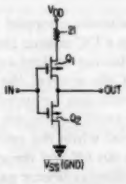
pressure sensitive switch means located within the interior of said casing and operative to interrupt a supply of electrical power to electrical and electronic equipment located within said casing when the pressure in the interior of the casing falls below a predetermined value.

4,209,713

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE IN WHICH DIFFICULTIES CAUSED BY PARASITIC TRANSISTORS ARE ELIMINATED

Kazuo Satou, Yokohama; Mitsuhiko Ueno, Fujisawa, and Yasoji Suzuki, Ayase, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 705,960, Jul. 16, 1976, abandoned. This application May 31, 1978, Ser. No. 911,164
Claims priority, application Japan, Jul. 18, 1975, 50-87917; Jan. 8, 1976, 51-1132
Int. Cl.² H03K *17/16, 17/72, 19/40*; H01L *27/02*
U.S. Cl. 307—200 B **4 Claims**



1. A semiconductor integrated circuit device comprising:

a CMOS circuit having an input part and an output part, the structure of the CMOS circuit characterized by the formation therein of parasitic thyristors;

noise absorption means for absorbing impulse noise that otherwise could become trigger pulses for the thyristors; and

means for connecting said noise absorption means between a source electrode of the CMOS circuit and the positive terminal of an external power source;

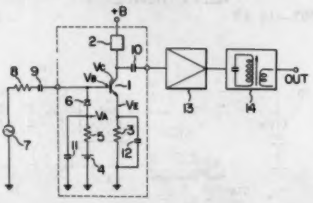
said input part of the CMOS circuit being that of a semiconductor integrated circuit device.

4,209,714

LOGARITHMIC AMPLIFIER

Yukihiko Miyamoto, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1977, Ser. No. 806,098
Int. Cl.² H03K *5/08*; G06G *7/12*
U.S. Cl. 307—229 **5 Claims**



1. A logarithmic amplifier circuit comprising at least one transistor connected in a common-emitter amplifier arrangement, said transistor having base, collector and emitter electrodes, said emitter electrode being connected to ground through a resistor, said collector electrode being connected to a power source through a load and providing an output signal, said base electrode being connected to a bias voltage source through a diode and to an input signal source, said diode and the base-emitter junction of the transistor cooperating to rectify the input signal from said signal source and comprising means to impart a logarithmic input-amplitude-level-to-output-amplitude-level transfer characteristic to the amplifier circuit for a predetermined amplitude range of input signals.

4,209,715

LOGIC CIRCUIT

Kiyoshi Aoki, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 9, 1977, Ser. No. 859,139
Claims priority, application Japan, Dec. 14, 1976, 51-150197; Dec. 14, 1976, 51-150198
Int. Cl.² H03K *3/286, 19/08, 19/20, 21/00*
U.S. Cl. 307—291 **15 Claims**

1. A logic circuit comprising:

first and second integrated-injection logic NAND/NOR gates, each having a plurality of inputs and outputs, said first and second NAND/NOR gates being cross-coupled with respect to first inputs and first outputs thereof, said first NAND/NOR gate having second and third inputs connected to receive a first clock signal and a first logic input signal, respectively, and said second NAND/NOR gate having second and third inputs connected to receive said first clock signal and a second logic input signal, respectively, said first and second NAND/NOR gates having second outputs;

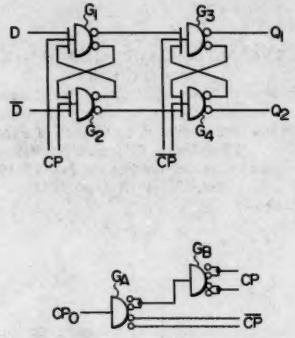
third and fourth integrated-injection logic NAND/NOR gates, each having a plurality of inputs and outputs, said third and fourth NAND/NOR gates being cross-coupled with respect to first inputs and first outputs thereof, said third NAND/NOR gate having a second input connected to receive a second clock signal substantially complementary to said first clock signal and a third input connected to said second output of said first NAND/NOR gate, and said fourth NAND/NOR gate having a second input connected to receive said second clock signal and a third

input connected to said second output of said second NAND/NOR gate; and

clock means coupled to said NAND/NOR gates for supplying said first clock signal to said second inputs of said first and second NAND/NOR gates and for supplying said second clock signal to said second inputs of said third and fourth NAND/NOR gates, said clock means including:

a first inverting gate comprised of a multiple-collector output transistor having a base input connected to receive a clock signal, and first, second and third collector outputs, said first and second collector outputs of said multiple-collector output transistor providing one of said first and second clock signals; and

a second inverting gate having an input coupled to said third collector output of said multiple-collector output transistor of said first inverting gate, and first and second outputs providing the other of said first and second clock signals, said second inverting gate being an integrated-injection logic inverting gate.

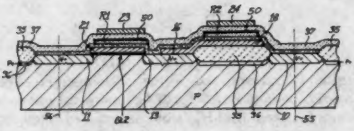


4,209,716

SEMICONDUCTOR INTEGRATED CIRCUIT WITH IMPLANTED RESISTOR ELEMENT IN SECOND-LEVEL POLYCRYSTALLINE SILICON LAYER

Joseph H. Raymond, Jr., Katy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1977, Ser. No. 801,699
Int. Cl.[2] H01L *29/04, 29/78, 23/48*
U.S. Cl. 357—59 **16 Claims**



1. An N-channel, silicon-gate MOS integrated circuit of the type having field oxide surrounding transistor areas of the face of a semiconductor substrate and a first level of polycrystalline silicon extending across the field oxide and contacting at least one of the transistor areas, the first level providing gates for the transistors, comprising:

(a) a second level of polycrystalline silicon at least partially overlying the first level on said face but insulated therefrom,

(b) a resistor region in the second level implanted with conductivity determining impurity,

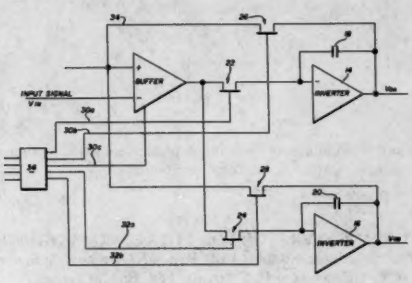
(c) conductive regions in the second level on both ends of the resistor region, the conductive regions being doped at a level much higher than the resistor region.

4,209,717

SAMPLE AND HOLD CIRCUIT

John E. Mahony, Sacramento, Calif., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 7, 1977, Ser. No. 848,989
Int. Cl.[2] G11C *27/02*
U.S. Cl. 307—353 **6 Claims**



1. A low drift sample-and-hold circuit comprising:

input buffer means having inverting and non-inverting inut terminal means, and arranged to receive an input signal at one of its inverting and non-inverting input terminal means;

second buffer means characterized by a minimum input impedance in the order of 10^{11} ohms;

first switching means responsive to a first enabling signal for coupling the input of the second buffer means to the output of the input buffer means;

second switching means responsive to a second enabling signal to couple the output of the second buffer means to the other of the non-inverting and inverting input terminal means,

the input/output polarity relationship of the second buffer means being such that an input signal change produces a non-inverting change in the output signal of the second buffer means; and

means for simultaneously producing the enabling signals during application of the input signal to the input buffer means.

4,209,718

LINEAR INDUCTION MOTOR

Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, and Vladimir A. Trofimov, selo Balakley, pereulok Tikhy, 8, Cherkasskaya, all of U.S.S.R.

Filed Oct. 23, 1978, Ser. No. 953,742
Int. Cl.[2] H02K *41/02*
U.S. Cl. 310—13 **1 Claim**

1. A linear induction motor comprising:

a secondary element including an electrically conductive part and a ferromagnetic base;

two angles forming said electrically conductive part of said secondary element and arranged with a gap therebetween so that apexes thereof face each other;

horizontal flanges of said angles;

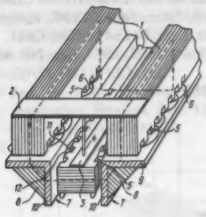
three rigidly interconnected longitudinal laminations acting as an inductor, said horizontal flanges of said angles being arranged under the extreme laminations;

vertical flanges of said angles with said middle lamination arranged therebetween;

a plurality of slots provided in said middle lamination and turned to said vertical flanges of said angles;

a motor winding of one phase enclosed within said slots of said middle lamination;

a plurality of slots provided in said two extreme laminations and turned to said horizontal flanges of said angles;



motor windings of two other phases enclosed within said slots of said two extreme laminations.

4,209,719

TACHOGENERATOR FOR ROTATING MACHINERY

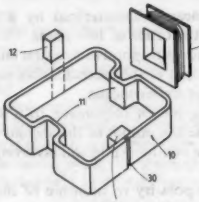
Fritz Schädlich, Stetten, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,403

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729740

Int. Cl.² H02K *15/10*

U.S. Cl. 310—42 **5 Claims**



1. Tachogenerator for generating electrical signals related to the speed of rotation of a machine member having

an electromagnetic system including two coil elements (**14**), two magnet elements (**12**) and soft-iron flux guide elements (**10, 16**), and wherein

the flux guide elements include a soft-iron frame (**10**) which defines a closed ring having a central opening, said frame being shaped to further define diametrically opposite pole pieces (**11**) on each of which is mounted one of said two coil elements (**14**), said two magnet elements (**12**) being located on diametrically opposite parts of said frame (**10**) and angularly displaced from said coils (**14**);

and two soft-iron core elements (**16**), coupled to said machine member, of part-cylindrical shape, and having an angular extent to form a rotating magnetic flux path between a pole piece (**11**) and a magnet element (**12**) on the frame to bridge the angular gap between a pole piece (**11**) and a magnet element (**12**) subsequent thereto in the direction of rotation and, upon continued rotation, to bridge the gap between said magnet element and the next following pole piece (**11**);

said part-cylindrical soft-iron elements being separated by a non-magnetic gap;

said soft-iron frame (**10**), said magnet element (**12**) and said coil element (**14**) being located on a single assembly formed as a plastic molding

which comprises a body structure (**32**) of generally sleeve-like, approximately cylindrical form having diametrically outer flattened sides (**38**) against which the pole pieces (**11**) of said soft-iron frame (**10**) are positioned to bear;

and further formed with outwardly radially projecting portions (**33**),

each projecting portion being formed with an axial groove (**35**) in which the magnet elements (**12**) are fitted, the soft-iron frame (**10**) fitting around said magnet elements and said sleeve-like body (**32**) to engage said magnet elements (**12**) positioned in said groove (**35**) and engaging the flattened sides (**38**) of said generally sleeve-like body (**32**).

4,209,720

ELECTRIC MOTORS SUPPLIED WITH CHOPPED CURRENT

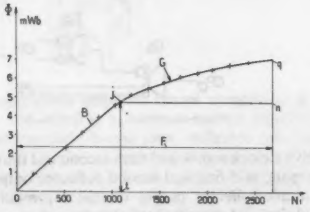
Pol B. L. Ducrot, Garches, and Jean-Paul Cloup, Sartrouville, both of France, assignors to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Jan. 3, 1979, Ser. No. 719

Claims priority, application France, Jan. 11, 1978, 78 00702

Int. Cl.² H02K *1/04, 1/12*

U.S. Cl. 310—45 **11 Claims**



1. A DC electric motor intended to be supplied with chopped current, comprising a rotor, forming an armature, adapted to rotate inside a stator, forming an inductor, comprising poles, the space between the rotor and the poles forming an air-gap, a motor in which the representative curve of the magnetic flux passing through a pole of the stator, with respect to the ampere-turns of this pole, has an initial linear part followed by a bend, characterized by the fact that it is arranged so that the bend of the representative curve of the magnetic flux with respect to the ampere-turns has its origin situated approximately in the middle of the interval of use of the motor, and that the radial dimension of the air-gap is sufficiently large for the flux increase, beyond the origin of the bend, with respect to the ampere-turns, to be at least equal to substantially a third of the flux increase in the linear part which precedes the bend.

4,209,721

EXTERNAL ROTOR MOTOR

Kurt Feldle, Würzburg, and Reiner Schönberger, Freiburg-Landwasser, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 793,603, May 4, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,167

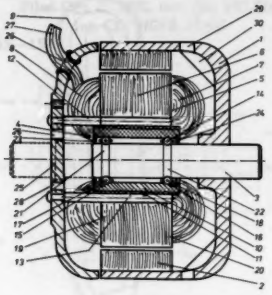
Claims priority, application Fed. Rep. of Germany, May 4, 1976, 7614054[U]

Int. Cl.² H02K *5/16*

U.S. Cl. 310—67 R **8 Claims**

1. In an electric motor having an external rotor, an armature shaft passing therethrough, and an internal stator surrounding said armature shaft, said armature shaft being coupled to said stator by a rolling bearing, the improvement wherein said bearing comprises a double-rowed radial bearing having a common outer ring mounted within the bore of said stator, and supportedly held by said stator in a substantially fixed position,

first and second outer races formed in said common outer ring, said outer races spaced from one another and adapted to receive first and second rows of rolling elements, and first and second inner races worked directly into said armature shaft.

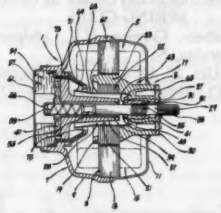


4,209,722

DIE CAST ROTOR WITH CAST-IN-PLACE OIL RETURN MEMBER

C. Theodore Peachee, Jr., Maryland Heights, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 21, 1978, Ser. No. 944,393
Int. Cl.[2] H02K *7/08*
U.S. Cl. 310—90 **5 Claims**



1. A die cast rotor for an electric motor or the like, said rotor having a rotor body of die cast metal, said body having a longitudinal central axis about which said rotor is rotatable, and a longitudinal central opening substantially coaxial with said central axis, a non-integral tubular oil return member defining the inner surface of a portion of said central opening, said tubular oil return member having an inner end, said die cast rotor body surrounds said inner end of said oil return member and engages both the inside and outside surfaces thereof so as to sealably secure said tubular oil return member to said rotor body and to prevent the leakage of oil between said inner end of said oil return member and said rotor body.

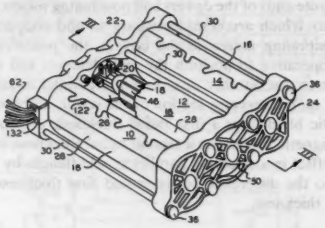
4,209,723

ELECTRIC MOTOR APPARATUS

Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Sep. 26, 1977, Ser. No. 836,354
Int. Cl.[2] H02K *7/20*
U.S. Cl. 310—112 **3 Claims**

1. A multiple electric motor assembly comprising, in combination, a plurality of separate, metallic, annular motor casings in parallel, side-by-side relationship each having an axis, a first end and a second end, a single piece first synthetic plastic cap mounted upon said casings' first ends, a plurality of first armature bearings mounted in said cap whereby a bearing is located coaxial with each casing axis, a second single piece synthetic plastic cap mounted upon said casings' second ends, a plurality of second armature bearings mounted in said second cap whereby a second bearing is located coaxial with each casing axis, an armature rotatably mounted within each casing upon said first and second bearings, said casings being of sufficient length to substantially enclose the associated armature, tie rods interposed between said end caps maintaining assembly thereof upon said casings, a brush card mounted upon said second end cap having a plurality of openings therein each receiving an armature, a plurality of electric brushes mounted upon said card adjacent each opening engaging the adjacent armature, and a plurality of interengaging lugs and recesses defined on said second end cap and said brush card to assure predetermined alignment of said brush card on said second end cap during assembly.

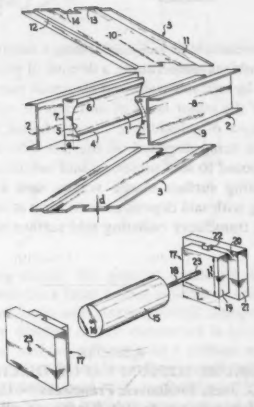


4,209,724

PERMANENT MAGNET STATOR FRAME STRUCTURE FOR AN ELECTRIC MOTOR

Pierre Periou, Cergy, France, assignor to Compagnie Industrielle de Mecanismes, France

Division of Ser. No. 774,023, Mar. 3, 1977, Pat. No. 4,131,989.
This application Sep. 28, 1978, Ser. No. 946,660
Claims priority, application France, Mar. 19, 1976, 76 08113
Int. Cl.[2] H02K *21/38*
U.S. Cl. 310—154 **7 Claims**



1. In an electric motor comprising a stator and a rotor having a shaft, the stator comprising a frame of a material selected from a group consisting of iron and magnetic sheet, two magnetic blocks fixed in confronting relation on the frame, the frame comprising two support elements on each of which elements there is fixed a respective one of the magnetic blocks, two covers of a material selected from a group consisting of iron and magnetic sheet attached to the support elements on

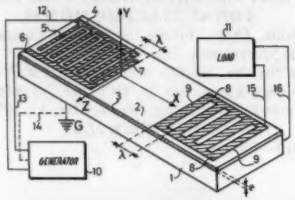
each side of the magnetic blocks and interconnecting the support elements, an end element supporting the shaft of the rotor disposed at each end of the frame, the following improvement: the support elements are each constituted by a U-section sheet having a central web on which a respective one of said magnetic blocks is fixed and two parallel planar flanges, and the two covers each have planar lateral portions in contact with and fixed to said flanges; there are provided positioning means at opposite ends of the covers and positioning means on the end elements which are complementary to and cooperative with the positioning means of the covers, the positioning means being operative to position the end elements and the covers relative to one another in a direction parallel to said flanges; and, in each transverse section of the stator, a first one of said magnetic blocks has a first radial thickness, a second one of said magnetic blocks has a second radial thickness, each cover being offset in a direction parallel to said flanges by a distance equal to the difference between said first thickness and said second thickness.

4,209,725

SELENIUM LAYER PIEZOELECTRIC DEVICE

Eugene Dieulesaint; Daniel Royer, and Richard Guedj, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 24, 1978, Ser. No. 954,079
Claims priority, application France, Oct. 25, 1977, 77 32053
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—313 **13 Claims**



1. A piezoelectric device comprising a substrate non-piezoelectric at ambient temperature, a deposit of piezoelectric material carried by said substrate, and electrode means located on at least one of the major faces of said deposit; said deposit comprising a layer of selenium in the crystalline state; said electrode means being disposed on the free side of said selenium deposit opposed to said substrate; said substrate being capable of propagating surface elastic waves, said electrode means cooperating with said deposit so as to form at least one electromechanical transducer radiating said surface elastic waves.

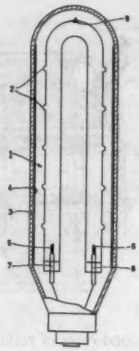
4,209,726

LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMP

Alexander G. Jack, Eindhoven; Franciscus N. C. Baeten, Nijmegen, and Johannes van de Bilt, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,370
Claims priority, application Netherlands, Nov. 2, 1977, 7712059
Int. Cl.[2] H01J *61/22, 61/26, 61/30*
U.S. Cl. 313—174 **5 Claims**

1. A low-pressure sodium vapor discharge lamp having a potassium-containing glass discharge vessel, two electrodes disposed in said vessel, and means for preventing the vapor pressure of potassium in the discharge vessel from exceeding



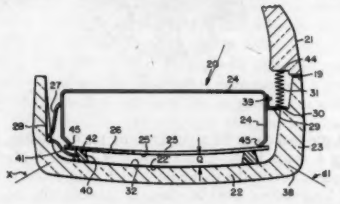
3×10^{-5} torr during the life of the lamp, said means comprises a potassium absorbing getter disposed in the discharge vessel.

4,209,727

APERTURE MASK SUPPORTED BY SPRING LUGS AND SPRING CLIPS

Lawrence B. Hausheer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,489
Int. Cl.[2] H01J *29/07, 31/08, 29/82*
U.S. Cl. 313—404 **9 Claims**

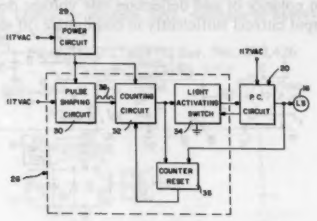


1. In a color television bulb formed with a panel, a peripheral panel skirt integral therewith, a funnel portion adapted to mate with the panel skirt, a frame and aperture mask adapted to be mounted in said frame and secured in spaced relation with the panel; a supporting structure for the aperture mask and frame including: peripherally located outwardly extending spring lugs and peripherally located outwardly extending spring clips secured to the frame and respectively operative for xy orientation and a Q spacing of the mask and frame; the panel skirt being formed with a selected number of V grooves each located so as to receive a corresponding one of the spring lugs; and a ledge face spaced away from an inside surface of the panel to cooperatively engage with and support the spring clips, a forward portion of the funnel adapted to be in spaced relation with the ledge face, spring means engaging each respective spring clip at one end and the forward portion of the funnel at the other when located in said spaced relation for urging each respective spring clip against the ledge face such that xy orientation and Q spacing of the aperture mask and frame are fixed relative to the panel when the funnel and panel skirt are mated.

4,209,728
OUTDOOR LIGHTING SYSTEM AND METHOD

Robert J. Membreno, Los Altos, Calif., assignor to Sai Engineers, Inc., Santa Clara, Calif.

Filed Oct. 2, 1978, Ser. No. 947,566
Int. Cl.[2] H05B 37/02
U.S. Cl. 315—159 6 Claims



1. An outdoor luminaire arrangement, comprising:

(a) a luminaire housing adapted to support a light source;

(b) first circuit means including a light sensitive device operating between first and second states in response to and depending on the level of ambient light to which said device is subjected, said device operating in said first state for connecting said light source to a source of power when the ambient light is below a predetermined level and in said second state for disconnecting said light source from said power source when the ambient light is above said predetermined level, whereby under the control of said light sensitive device said light source is automatically turned on during the dark hours of the night and automatically turned off during the light hours of the day by said first circuit means; and

(c) second circuit means for overriding the operation of said light sensitive device and disconnecting said light source from said power supply for a predetermined period of time during said dark hours while said ambient light is below said predetermined level and said light sensitive device is in its first state, said second circuit means including counting means connected with said first circuit means for automatically starting said overriding period an initial predetermined period of time after said light sensitive device moves into its first state from its second state when said ambient light first goes below said predetermined level and for automatically ending said overriding period, and means for automatically resetting said counting means to start said initial period only after said light sensitive device moves into its first state after having been in its second state, whereby said counting means is reset only once a day.

4,209,729
ON CHIP VACUUM FLUORESCENT DISPLAY DRIVE

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1978, Ser. No. 918,292
Int. Cl.[2] H05B 43/00
U.S. Cl. 315—169.1 6 Claims

1. A display system comprising:

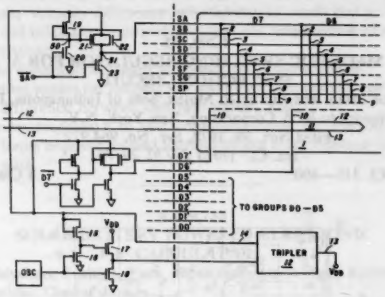
(a) a plurality of displayable characters each being comprised of a respective set of activatable segment electrodes;

(b) an electron-emissive member common to all of said displayable characters;

(c) a plurality of anode electrodes in cooperative association with said electron-emissive member, each of said anode electrodes being in cooperative association with a respective one of said characters;

(d) electrical power supply means for supplying electrical current to said electron-emissive member to electrically heat said member and for providing a predetermined voltage; and

(e) means for alternately enabling and disabling the supply of heating current to said electron-emissive member at a predetermined rate in dependence upon the thermal inertia of said member so as to maintain the temperature

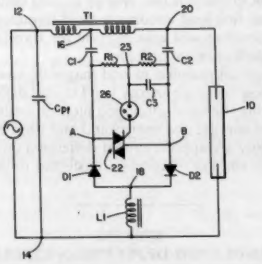


thereof within a predetermined range and for selectively applying said predetermined voltage between said electron-emissive member and selected ones of said anode electrodes during periods when said current supply to said electron-emissive member is disabled, whereby a visual display is produced at selected character positions associated with said selected ones of said anode electrodes.

4,209,730
STARTING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

John J. Pasik, Romeoville, Ill., assignor to Larry McGee Company, Chicago, Ill.

Filed Jul. 14, 1978, Ser. No. 924,509
Int. Cl.[2] H05B 41/16, 41/04
U.S. Cl. 315—290 10 Claims



1. A starting circuit for gaseous discharge lamps having associated therewith a lamp ballast in series between a voltage supply and said lamp, said starting circuit comprising:

(a) a voltage doubler circuit connected in circuit with said ballast and said lamp for storing a voltage approximately twice the peak value of the voltage supply when said lamp is nonconducting, said voltage doubler including:

(i) a first circuit arm having a capacitor and diode in series, said diode conducting in a first direction,

(ii) a second circuit arm having a capacitor and diode in series, said diode conducting in the opposite direction to the first diode,

(iii) said first and second circuit arms being connected to the supply voltage at their diode ends and connected to the ballast at their capacitor ends,

whereby one of said capacitors will charge to the value of

said voltage supply during each half cycle of the AC supply voltage,

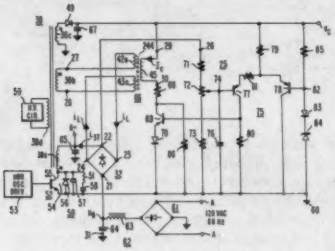
(b) trigger means connected in shorting relation across said voltage doubler for selectively discharging the charge stored in said doubler circuit through a portion of said ballast to produce a high voltage starting pulse to initiate conduction in said lamp.

4,209,731

MAGNETIC SWITCHING REGULATOR FOR A DEFLECTION CIRCUIT

Sandor Miko, and Phillip R. Mullis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,972
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—400 **8 Claims**



1. A magnetically regulated deflection circuit, comprising:

a deflection winding;

a deflection generator coupled to said deflection winding for producing deflection current in said deflection winding, said deflection generator including a source of deflection rate energy;

a source of unregulated energy;

magnetic switching means including a first load winding wound around a core portion, said first load winding applying said source of unregulated energy and said source of deflection rate energy to said deflection circuit when said first load winding is short-circuited by magnetically saturating said core portion for transferring energy to said deflection circuit; and

a control circuit coupled to said magnetic switching means and responsive to an energy level of said deflection circuit for varying the short-circuiting interval within which said source of unregulated energy and said source of deflection rate energy are applied to said deflection circuit for regulating the amount of energy transferred to said deflection circuit.

4,209,732

REGULATED DEFLECTION CIRCUIT

Lawrence E. Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,973
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—400 **5 Claims**

1. A voltage regulator for a deflection system, comprising:

a deflection winding;

a deflection circuit coupled to said deflection winding for generating scanning current in said deflection winding each deflection cycle;

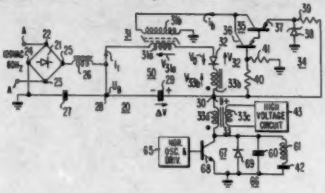
a transformer coupled to said deflection circuit, including a first transformer winding in which an alternating current deflection rate voltage is developed;

an input terminal coupled to said deflection circuit for providing an input voltage to said deflection circuit;

a source of unregulated voltage;

a rectifier coupled to said input terminal and said source of unregulated voltage and poled to conduct input current from said source to said input terminal;

a saturable reactor including a first reactor winding series coupled with said source, said first transformer winding, said rectifier, and said input terminal, a first polarity of said deflection rate voltage forward biasing said rectifier into conducting input current to said input terminal, a second polarity of said deflection rate voltage decreasing said input current sufficiently to commutate off said rectifier and decouple said input terminal from said source of unregulated voltage, for developing an average DC voltage across said rectifier; and



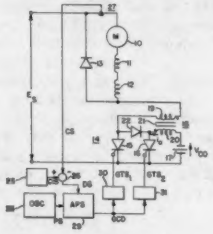
biasing means coupled to said first reactor winding and responsive to said unregulated voltage for changing the effective impedance of said first reactor winding for varying the instant at which said rectifier is commutated off for varying said average DC voltage across said rectifier for maintaining a regulated input voltage.

4,209,733

MOTOR CONTROL APPARATUS WITH AN IMPROVED THYRISTOR CHOPPER CIRCUIT

Hiroshi Narita; Masahiko Ibamoto, and Jinichi Toyama, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 25, 1978, Ser. No. 936,927
Claims priority, application Japan, Aug. 26, 1977, 52-101643
Int. Cl.[2] H02P *29/02*
U.S. Cl. 318—345 C **9 Claims**



1. A motor control apparatus to control the supply of current from a source to an electric motor comprising:

a chopper circuit through which current is supplied to said electric motor from said source, including a main thyristor, a series connection of an auxiliary thyristor and a diode, which series connection is connected in parallel to said main thyristor, and a capacitor connected in parallel to said auxiliary thyristor;

signal means for generating a current instruction signal;

control means connected to said signal means and said chopper circuit for controlling the duty factor of said chopper circuit depending on said current instruction signal; and

a saturable transformer having a primary winding connected to carry at least a part of the current flowing through said electric motor, and a secondary winding connected within the closed circuit formed when the auxiliary thyristor of said chopper circuit is turned on, whereby discharging

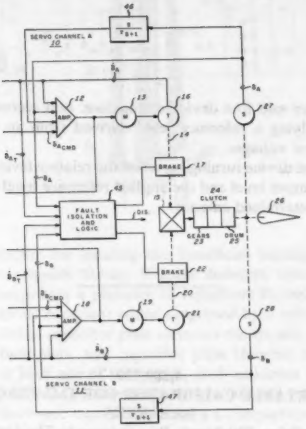
current and resonant current flow through said secondary winding and are dependent on current supplied to the electric motor.

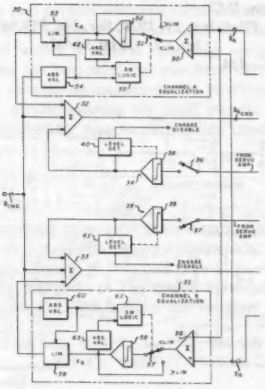
4,209,734

DYNAMIC EQUALIZATION SYSTEM FOR DUAL CHANNEL AUTOMATIC PILOT

Stephen S. Osder, Scottsdale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,426
Int. Cl.[2] G05B 9/03
U.S. Cl. 318—564 **5 Claims**





1. A dual channel servo control system for aircraft automatic pilots for positioning a control surface in accordance with an input command signal comprising

first and second substantially identical servomotor channels responsive to said input command signal and including corresponding first and second servomotors each normally operating at substantially identical velocities for providing substantially identical first and second output motions in response to said command signal,

differential means responsive to said first and second servomotor outputs and having an output coupled to position said control surface,

first and second feedback means responsive to said respective first and second servomotors for supplying first and second velocity feedback signals to said first and second channels, respectively, such that upon failure of one of said channels said first and second velocity signals have a differential value that is large compared with the motion of said control surface, and

equalization means coupled to each of said channels respectively and responsive to said first and second velocity feedback signals of each of said channels for minimizing any velocity difference between the channels due to normal tolerance mismatch between the components of each channel,

said equalization means including integration means,

limiter means for limiting the maximum value of the velocity difference between said rate signals, and

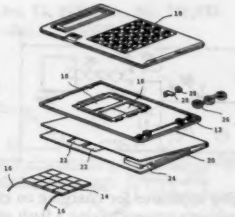
means responsive to said command signal for varying the limits imposed by said limiting means in accordance therewith.

4,209,735

SOLAR BATTERY POWERED ELECTRONIC CALCULATOR

Yoshisaburo Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1977, Ser. No. 837,288
Claims priority, application Japan, Sep. 29, 1976, 51/132062[U]
Int. Cl.[2] H01J 39/12; H01L 31/00; H02J 7/00
U.S. Cl. 320—2 **8 Claims**



1. A solar battery-powered electronic calculator comprising a top casing and an opposing bottom casing, said top casing containing a key input unit having a plurality of keys, and a liquid crystal display unit, said liquid crystal display unit having a liquid crystal mixture confined therein and means for activating the liquid crystal mixture so as to change the visibility of the liquid crystal mixture according to applied light, a substrate disposed between the top casing and the bottom casing, an insulating layer disposed between the key input unit and the substrate, said insulating layer containing contact means facing said bottom casing and positioned to correspond to said keys, key terminals and said liquid crystal display disposed on said substrate facing said top casing, said key terminals being positioned for contact with the contact means upon actuation of said keys, a solar battery panel rigidly disposed on said substrate facing said bottom casing, and window means provided in said bottom casing and positioned to correspond to the location of the battery panel for introducing light to said solar battery panel.

4,209,736

CONDITION RESPONSIVE BATTERY CHARGING CIRCUIT

Stanley G. Reidenbach, Ft. Wayne, Ind., assignor to General Electric Company, Carmel, Ind.

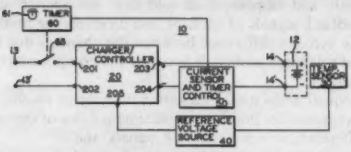
Filed Jul. 27, 1978, Ser. No. 928,705
Int. Cl.[2] H02J 7/10
U.S. Cl. 320—22 **26 Claims**

1. Apparatus for charging a storage battery, comprising:

input means for connection to a source of AC electrical energy;

means connected to the input means for providing a constant output voltage for charging the battery;

output means for connecting the constant output voltage providing means to the battery to be charged;



means for automatically varying the level of the constant output voltage as a function of battery temperature; and

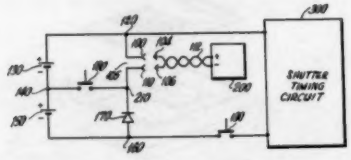
means for automatically terminating battery charging a predetermined time after current being supplied to the battery drops below a predetermined level.

4,209,737

APPARATUS FOR CHARGING CAMERA CELLS THROUGH FLASH BULB PACKAGE RECEPTACLE

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Feb. 28, 1978, Ser. No. 882,238
Int. Cl.[2] H02J *7/00*; G03B *15/03*
U.S. Cl. 320—2 **18 Claims**



1. Charging apparatus for charging an electrochemical cell contained within a camera having a flash apparatus receptacle comprising, in combination:

(a) a rechargeable cell housed within the camera and connected in circuit with the flash receptacle;

(b) a charging circuit having a positive terminal and a negative terminal and including a source of charging current;

(c) plug means connected to the charging circuit terminals and adapted to be mechanically and electrically received by the flash apparatus receptacle; and

(d) circuit means for providing a charging path in series with the rechargeable cells, whereby the rechargeable cell may be recharged in situ via current supplied thereto via the flash apparatus receptacle.

4,209,738

REGULATION CIRCUIT

Eric L. H. Nuver, and Robert F. Gaertner, both of San Marcos, Tex., assignors to Esquire, Inc., New York, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,969
Int. Cl.[2] G05F *1/40*
U.S. Cl. 323—22 SC **12 Claims**

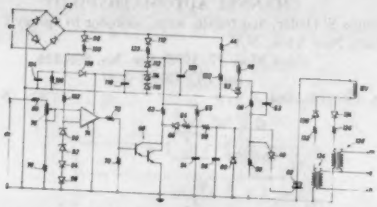
1. A power supply regulation circuit for providing timing gate signals to a power section of a power supply, the occurrence times of the power section gate signals determining the dc output level of the power section, comprising:

a first gated semiconductor device, conduction being determined by the voltage difference between a first and a second terminal thereof;

a second gated semiconductor device having its gate connected to the output of said first device and connectable to a voltage source for supplying the power section gate signals at the time said second device is conductive;

a first network connected to the first of the terminals of said first device for supplying a control voltage to render said first device conductive by sensing the dc output level from the power section being regulated;

a second network connected to the second of the terminals of said first device for supplying a control voltage to



render said first device conductive, said second network supplying a reference level derived from an applied ac source voltage;

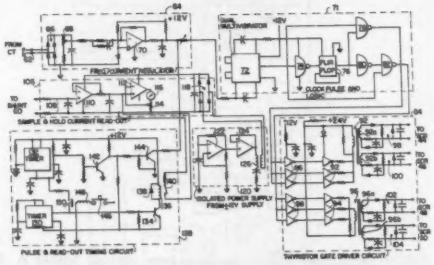
said first device turning on when the relative levels of sensed dc output level and the applied reference level differ by a predetermined amount.

4,209,739

PORTABLE CALIBRATOR FOR D.C. CIRCUIT BREAKERS

Derek A. Paice, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 27, 1978, Ser. No. 919,645
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—424 **18 Claims**



1. A portable calibrator for a d.c. circuit breaker having a trip coil, said calibrator comprising:

connecting leads for connecting the calibrator to the trip coil of the d.c. circuit breaker under test, test pulse generating means connected to said connecting leads for applying a constant amplitude current pulse that lasts for less than several hundred milliseconds to the d.c. circuit breaker under test of a current value sufficient to cause tripping of that circuit breaker and at a voltage level sufficient to overcome the resistance of the circuit breaker contacts and the connecting leads; and

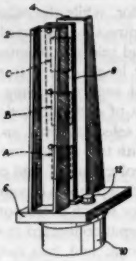
means for measuring the current pulse applied to the circuit breaker and providing and indication of the value thereof for comparison purposes with the required trip value of current for the breaker.

4,209,740

DETECTOR FOR LOCATING THE INTERFACIAL BOUNDARY LEVEL BETWEEN TWO LIQUIDS

Louis Marthe, Pau; Lucien Mondeil, Morlaas, and Max Serrus, Denguin-Lescar, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Apr. 6, 1978, Ser. No. 894,119
Claims priority, application France, Apr. 6, 1977, 77 10432
Int. Cl.[2] G01R *27/26*; G01F *23/26*
U.S. Cl. 324—61 R 10 Claims



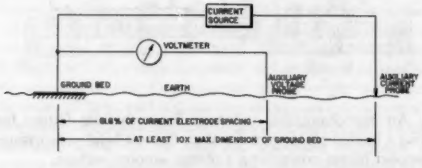
1. A detector for locating the interfacial boundary level between two liquids having different dielectric constants, of the type comprising a plurality of capacitors formed by two parallel external capacitor plates supported by a metallic base plate and central capacitor plate elements electrically insulated from said base plate, said capacitor plate elements being immersed in at least one of the liquids, each capacitor plate element being adapted to form part of an oscillating circuit connected to electronic means for effecting a comparison between the oscillation frequency of said circuit and a reference frequency, wherein the external capacitor plate elements are constituted by two parallel sectional members and the central capacitor plate elements are constituted by small metallic plates encased within a central insulating upright member placed between the two sectional members, said central upright member forming an insulating core provided with compartments for accommodating the small metallic plates, said core being covered by two insulating side cheeks with are welded thereto.

4,209,741

APPARATUS FOR THE CONTINUOUS MONITORING OF GROUND BED RESISTANCE

August D. Coby, Ripley, W. Va., and Wils L. Cooley, Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 8, 1978, Ser. No. 884,450
Int. Cl.[2] G01R *27/02*
U.S. Cl. 324—62 9 Claims



1. A system for measuring the electrical resistance of an earth electrode comprising in combination:

a ground bed having an earth test electrode;

a current probe inserted into the earth, said probe being spaced from said test electrode at least ten times the maximum dimension of the electrode under test;

a voltage probe inserted into the earth, said probe being spaced from the test electrode approximately 62% of the distance to the current probe as measured along a straight line joining the test electrode and current probe;

a substantially constant current a.c. source operable at a controlled frequency electrically connected to the electrode under test and the current probe, said source outputting a reference signal;

a voltage level sensor connected to the electrode under test and the spaced voltage probe;

a current sensing transformer operatively associated with the connection between the electrode under test and the constant current a.c. source;

means for receiving signals from both said voltage level sensor and said transformer;

means for synchronously rectifiying said received signals using the reference output signal from the constant current source; and

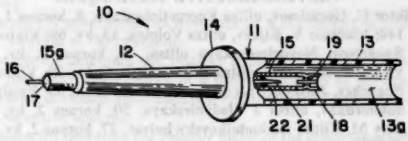
divider means for continuously dividing the output signals from said means for synchronously rectifying and outputting a signal representative thereof.

4,209,742

MODULAR PROBE SYSTEM

Herman G. Bender, Portland, and James E. Dikeman, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 13, 1976, Ser. No. 731,873
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—72.5 7 Claims



1. A modular signal acquisition probe for an electrical instrument, comprising

a probe head including input means for coupling said probe to a circuit under test, and output means comprising a jack for receiving and releasably retaining a mating plug therein,

a temination for coupling a signal acquired by said probe head to an input connector for said instrument, said termination including input means comprising a jack for receiving and releasably retaining a mating plug therein, and output means comprising an electrical connector configured to mate with said instrument's input connector, and

an elongate signal transmission line provided at one end with a plug configured to mate with said probe head jack and at its other end with a plug configured to mate with said termination jack.

4,209,743

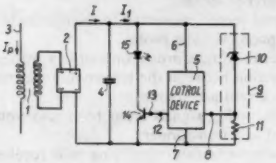
CIRCUIT ARRANGEMENT FOR MEASURING CURRENTS AT HIGH POTENTIAL

Bruno Müller; Ulrich Baumgärtl, both of Berlin, and Werner Kohler, Bentfeld, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,525
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738558
Int. Cl.[2] G01R *31/00*; H04B *9/00*
U.S. Cl. 324—96 7 Claims

1. In a circuit arrangement for measuring currents at high

potential, including a measurement value generator with a capacitor which is charged by a current proportional to the current to be measured and is discharged via a light-emitting diode in parallel therewith when a defined voltage is reached, whereby a sequence of light pulses with a frequency proportional to the current to be measured, for transmission via an optical transmission path to a measured value receiver with a photo element, is generated, the improvement comprising:



(a) a switching element with a control terminal coupled in series with the light-emitting diode;

(b) a control device with low operating power consumption having supply terminals coupled to the capacitor, the output of said control device coupled to said control terminal; and

(c) a threshold device shunted across said capacitor and providing an input to said control device when the defined voltage is reached.

4,209,744

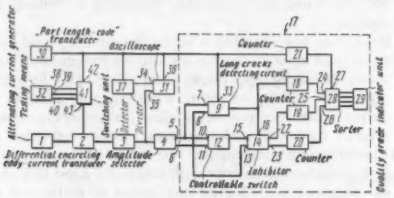
EDDY CURRENT DEVICE FOR AUTOMATICALLY TESTING THE QUALITY OF ELONGATED ELECTRICALLY CONDUCTIVE OBJECTS BY NON-DESTRUCTIVE TECHNIQUES

Viktor G. Gerasimov, ulitsa Energeticheskaya, 8, korpus 1, kv. 144; Vladimir V. Kljuev, ulitsa Volgina, 13, kv. 69; Viktor B. Kuznetsov, Novogireevskaya ulitsa, 14, korpus 2, kv. 29; Viktor P. Kurozaev, ulitsa Bobruiskaya, 6, kv. 29; Viktor I. Rogachev, Jurievsky pereulok, 22, korpus 2, kv. 55; Vasily V. Sukhorukov, ulitsa 2 Vladimirskaya, 50, korpus 2, kv. 51; Jury M. Ulitin, Beskudnikovsky bulvar, 27, korpus 2, kv. 55, and Jury K. Fedosenko, ulitsa Chugunnye vorota, 3, korpus 1, kv. 39, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 681,489, Apr. 29, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 889,931

Int. Cl.[2] G01R *33/00*

U.S. Cl. 324—241 **2 Claims**



1. An automatic eddy current inspection system for discrimination of defects in elongated parts made of conducting materials, comprising an alternating current generator provided with an output, a differential encircling eddy current transducer having an output and arranged to receive an elongated part of a conducting material to be tested and being connected to said output of said alternating current generator, said differential encircling eddy-current transducer having an exciting winding connected to said output of said alternating current generator and two sensing windings connected in series opposition and coupled inductively to said exciting winding, said two sensing windings being used as said output of said differential encircling eddy-current transducer; a detector provided with an input connected to said output of said differential encircling eddy-current transducer; an amplitude selector having at least two selection levels, a plurality of outputs whose number is equal to that of said selection levels and an input connected to said output of said detector; a signal analyzer connected to said amplitude selector; a long cracks detecting circuit of said signal analyzer, provided with two inputs connected to said outputs of said amplitude selector, a third input, and an output; a "part length-code" transducer provided with an output connected to said third input of said long cracks detecting circuit; an oscilloscope having a synchronization input and at least two alarm signal inputs, one of which is electrically connected to said output of said detector, while the other alarm signal input of the oscilloscope is directly connected to said "part length-code" transducer, and said synchronization input is also connected to said "part length-code" transducer; a controllable switch of said signal analyzer having its control input connected to said output of said amplitude selector which corresponds to the higher selection level; an inhibitor of said signal analyzer provided with two inputs, one of which is connected in series to the control circuit of said controllable switch and the second one of said two inputs is connected to said output of said amplitude selector which corresponds to the higher selection level, a control input connected to said output of said long cracks detecting circuit, and two outputs; a minor defects counter of said signal analyzer, provided with an input, connected with said first output of said inhibitor, and an output; a major defects counter of said signal analyzer, provided with an input, connected to said second output of said inhibitor, and an output; a counter for determining the length of long cracks of said signal analyzer provided with an input, connected to said output of said long cracks detecting circuit, and an output; a counter for determining the length of the tested parts of said signal analyzer provided with an input, connected to said output of said "part length-code" transducer, and an output; a sorter of said signal analyzer, provided with four inputs and a plurality of outputs, one input being connected to said output of said counter for determining the length of tested parts, a second input being connected to said output of said counter for determining the length of long cracks, a third input being connected to said output of said minor defects counter, and a fourth input being connected to said output of said major defects counter; and a quality grade indicator unit having a plurality of inputs, each of which is connected to a respective output of said sorter.

4,209,745

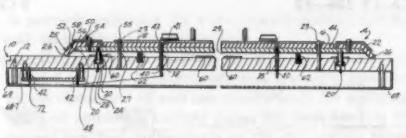
INTERCHANGEABLE TEST HEAD FOR LOADED TEST MEMBER

Clyde K. Hines, Arcadia, Calif., assignor to Everett/Charles, Inc., Pomona, Calif.

Filed Jun. 12, 1978, Ser. No. 914,726

Int. Cl.[2] G01R *31/02*; H01R *3/04*

U.S. Cl. 324—158 F **2 Claims**



1. An interchangeable test head for a vacuum fixture for testing a loaded planar test member, the test head comprising:

support means comprising a planar support surface;

a platform in opposed relation to the planar support surface and having a planar test member surface against which such a planar test member can be positioned;

guide means for guiding the platform along a path with the planar test member surface oriented facing away from and

substantially parallel with the planar support surface, the path being from a deactuated to an actuated position;

resilient seal means affixed to the platform and flared outwardly around the perimeter of the platform to a free edge which engages and forms a vacuum seal with the planar support surface thereby forming a wall of a vacuum chamber from at least the platform to the support means;

frame means mounted on the platform for directing the seal means at an oblique angle toward the planar support surface;

stop means for limiting the deactuated position of the platform so that the entire free edge of the seal means remains in engagement with the planar support surface;

means providing a vacuum passage to the vacuum chamber, vacuum in the chamber causing the platform to move along the path from the deactuated position to the actuated position in a direction which is toward the planar support surface;

a plurality of spring probes spaced apart and mounted on the support means, each of the spring probes extending through the platform to such a test member positioned against the planar test member surface when the actuated condition of the platform exists and also extending through the support means to a connector end; and

a plurality of openings through the platform to permit vacuum in the chamber to be formed on a test member positioned against the planar test member surface thereby drawing the same against the spring probes.

4,209,746

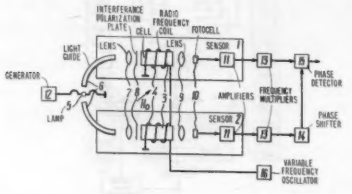
MAGNETIC FIELD GRADIENT MEASURING DEVICE

Jury M. Abramov, ulitsa Shkolnaya,4, kv. 55; Alexandr N. Kozlov, ulitsa Solnechnaya,4, kv. 61, and Svetlana E. Sinelnikova, ulitsa Solnechnaya,4, kv. 68, all of Moskovskaya oblast, Akademgorodok, U.S.S.R.

Filed Feb. 1, 1978, Ser. No. 874,552

Int. Cl.[2] G01R *33/08*

U.S. Cl. 324—301 **6 Claims**



1. A magnetic field gradient measuring device comprising a first sensor located at a first point of said magnetic field; a second sensor located at a second point of said magnetic field; an absorption cell in each of said sensors; atoms of a working matter filling said absorption cell; a light source in each of said sensors, arranged at the input of said cell and intended for optical pumping of said atoms of said working matter; a photocell in each of said sensors, arranged at the output of said cell and intended to receive the beam of light upon its passage through said cell; a radio frequency coil in each of said sensors, the axis of said radio frequency coil being parallel with that of the beam of light, said coil encompassing said cell; a means for energizing said radio frequency coils with current of a variable frequency close to the magnetic transition resonance frequency of said atoms of said working matter determined by the intensity of the magnetic field being investigated at the point of location of the respective sensor, said means being connected with its output to the inputs of said radio frequency coils; amplifiers, each connected to the output of one of said photocell; a phase detector connected with its input to outputs of said amplifiers.

4,209,747

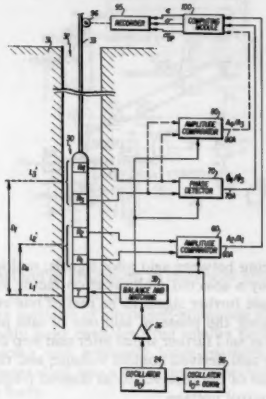
APPARATUS AND METHOD FOR DETERMINATION OF SUBSURFACE PERMITTIVITY AND CONDUCTIVITY

Gerald S. Huchital, Brookfield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,128

Int. Cl.[2] G01V *3/18, 3/12*

U.S. Cl. 324—338 **38 Claims**



1. Apparatus for determining the dielectric constant and/or conductivity of earth formations surrounding a borehole, comprising:

means for generating electromagnetic wave energy at a first location in the borehole;

means for detecting the relative attenuation of the electromagnetic wave energy at a second location in the borehole to obtain an attenuation-representative signal at one effective spacing;

means for detecting the relative phase of the electromagnetic wave energy at a third location in the borehole to obtain a phase-representative signal at another effective spacing;

said second location being between said first and third locations so that said one spacing is shorter than said another spacing;

said spacings being such as to cause said attenuation-representative signal and said phase-representative signal to be representative of the effects of formations at substantially the same depth of investigation; and

means responsive to said phase-representative signal and said attenuation-representative signal for determining the dielectric constant and/or conductivity of said formations by combining said signals from different spacings.

4,209,748

DIRECTIONAL RADIO SYSTEM FOR SINGLE SIDEBAND OPERATION

Herbert Weber, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,308

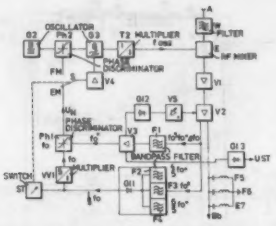
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709232

Int. Cl.[2] H09B *1/68*

U.S. Cl. 455—47 **6 Claims**

1. In a method of using single sideband operation for a directional radio system wherein a single sideband signal, which has been modulated with carrier frequency signals in the intermediate frequency band, is transmitted from a transmitter to a receiver, comprising the steps of: in the transmitter, providing the intermediate frequency signal which contains the base band to be transmitted with at least two pilot signals at difference

frequencies; and, in the receiver deriving a control voltage for tuning of the mixing oscillator of the receiver from the frequency spacing of the received pilot signals and from the frequency shift of the pilot signals produced by transmission of same over the radio links; the improvement wherein said step of deriving includes: separating the received pilot signals from the received intermediate frequency signal; combining the pilot signals to produce a further signal whose frequency is the



frequency spacing between said pilot signals; multiplying said further signal by a selected multiplication factor to cause the frequency of said further signal to be that of one of said pilot signals; comparing the phase of said one of said pilot signals with the phase of said further signal after said step of multiplying to produce said derived control voltage; and retuning the mixing oscillator of the receiver to its desired frequency with said derived control voltage.

4,209,749

RAILWAY COMMUNICATION SYSTEM

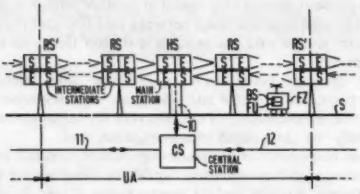
Friedbert Becker; Peter Kloeber, and Johann A. Steinkamp, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 825,819

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644206

Int. Cl.[2] H04B *7/20*

U.S. Cl. 455—56 **8 Claims**



1. A radio system for communication transmission between mobile send-receive stations moving along a prescribed route, and send-receive stations arranged along the route at prescribed distances and effective in both route directions, and a central station for two-way communication with said send-receive stations; characterized in that the send-receive stations of the route are arranged in successive transmission sections (UA), said transmission sections (UA) having respective main send-receive stations (HS) connected with said central send-receive station (CS) and having respective series of intermediate send-receive stations (RS, ZS) adjacent the respective main send-receive stations (HS) in regard to distance and covering successive segments of the route between the successive main stations (HS), and having communication with the central station (CS) via the respective associated main send-receive station (HS), the main send-receive station (HS) and the adjacent series of intermediate stations (RS, ZS) forming each transmission section (UA) representing the send-receive stations for signal exchange with the mobile stations (BS) as the mobile stations traverse such transmission section (UA); that for all transmission sections (UA) only two pairs of different send-receive frequencies in the range above one gigahertz especially between about ten and about forty gigahertz are used; that along the route, the distance between each two consecutive stations of each transmission section (UA) amounts to a mean value of about one kilometer so as to guarantee operation of the successive stations within line of sight distances of each other, and the distance between two consecutive main stations (HS) amounts to a mean value of ten kilometers; that successive transmission sections (UA) along the route use alternately different pairs of said send-receive frequencies for reciprocal decoupling of the successive transmission sections (UA); and that the mobile stations (BS) each have a frequency switching device (FU) for an automatic change from one of said pairs of send-receive frequencies to the other during the transition from signal exchange with one transmission section (UA) to signal exchange with the next transmission section (UA).

4,209,750

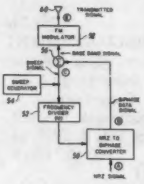
SWEPT-CARRIER TRANSMISSION SYSTEM ADAPTED FOR USE IN PROCESS CONTROL SYSTEMS

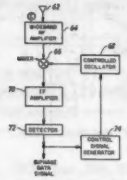
Manuel P. Freitas, South Easton, Mass., and Jacob Klapper, New York, N.Y., assignors to The Foxboro Company, Foxboro, Mass.

Filed Jun. 19, 1978, Ser. No. 916,600

Int. Cl.[2] H04B *1/06*

U.S. Cl. 455—63 **27 Claims**





1. In process control apparatus of the type to be used with a complex industrial process having at remote locations a number of variable conditions to be controlled from a central location, wherein data signals are transmitted between the central location and the remote locations by a data transmission system in which a data-modulated high-frequency carrier signal is swept in a repetitive time pattern through a wide range of frequencies;

the transmitter apparatus of said system being arranged to provide that a characteristic of the data signal modulation has a predetermined relationship with respect to said repetitive time pattern; the system further including receiving means to receive and track said high-frequency carrier signal, as follows:

(1) mixer means having first and second inputs and an output;

(2) a signal channel coupled to said mixer output and having a relatively narrow bandwidth relative to said sweep range of frequencies;

(3) means to couple to said first mixer input a swept-fre-

quency signal derived from and corresponding to said high-frequency swept-carrier signal;

(4) a local oscillator coupled to said second mixer input;

(5) control means adapted to alter the frequency of said local oscillator throughout a range of frequencies matching the range of frequencies of said swept-frequency signal;

(6) operating means coupled to the output of said mixer means to develop a control signal derived from the data signal modulation on said swept-frequency signal, said control signal representing said data-signal characteristic;

(7) means coupling said control signal to said control means; and

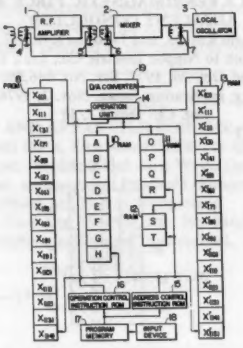
(8) said control signal effecting synchronism between the sweeping of said local oscillator and the sweeping of said swept-frequency signal to effectively null the sweep of said swept-frequency signal so as to produce a corresponding narrow-band data-modulated signal for said narrow-band signal channel.

4,209,751

CHANNEL SELECTION APPARATUS

Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1976, Ser. No. 742,226
Claims priority, application Japan, Dec. 1, 1975, 50-143638
Int. Cl.[2] H04B 1/06
U.S. Cl. 455—186 **7 Claims**



1. A channel selection apparatus for a receiving device comprising:

storage means including at least one programmable read only memory (PROM) for digitally storing information sequences obtained by Hadamard transforming digitized voltages corresponding to either frequencies of respective channels, or respective boundary frequencies between adjacent channels which may be received by said receiving device;

processing means coupled to said storage means for inversely Hadamard transforming the transformed information sequences digitally stored in said storage means to synthesize said digitized voltages corresponding to channel frequencies or channel boundary frequencies;

a read/write memory coupled to said processing means for storing the inversely Hadamard transformed digitized voltages obtained form said information sequences; and

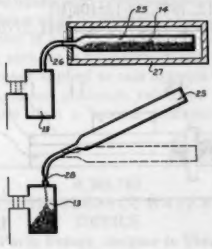
means for reading from said read/write memory selected digitized channel selection voltages and using said read voltages to either select a channel for said receiver or indicate the frequency of a selected channel.

4,209,752

GETTER PUMP FOR HYDROGEN MASER

William B. Bridges, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1978, Ser. No. 932,745
Int. Cl.[2] H01S 1/06
U.S. Cl. 330—4 **1 Claim**



1. In a method of producing an improved getter for a hydrogen maser, the steps comprising,

screening particles of zirconium-aluminum alloy to separate relatively large particles from smaller particles,

then placing said relatively large particles of zirconium-aluminum alloy into a container connected by tubing to a pump body,

then heating said container whereby said particles of zirconium-aluminum alloy are heated,

then cooling said particles of zirconium-aluminum alloy, and

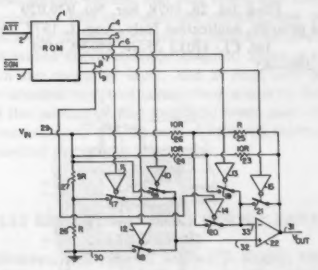
then transferring said particles of zirconium-aluminum alloy to a pump body attached to a hydrogen maser through a screened passageway.

4,209,753

AMPLIFIER PROGRAMMABLE IN GAIN AND OUTPUT POLARITY

John Riley, New York, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,152
Int. Cl.[2] H03G 3/00
U.S. Cl. 330—51 **5 Claims**



1. In a programmable amplifier, the combination of;

an input line;

an output line;

an operational amplifier connected between said lines;

two input control lines;

a plurality of solid state switches for controlling the gain and polarity of said amplifier;

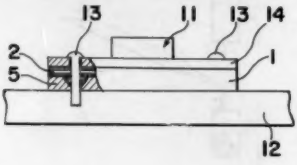
and a read only memory connected between said control lines and said switches for controlling said switches in accordance with a predetermined program in said read only memory and the states of said control lines.

4,209,754

CERAMIC CAPACITORS

Haruo Shiki; Yoshiteru Saito; Marefumi Katsuki, all of Tokyo, and Kikuo Wakino, Nagaokakyo, all of Japan, assignors to Nippon Electric Co., Ltd., Toyko and Murata Manufacturing Co., Ltd., Kyoto, both of, Japan

Filed Sep. 7, 1978, Ser. No. 940,337
Claims priority, application Japan, Sep. 12, 1977, 52-123107[U]; Sep. 12, 1977, 52-123108[U]
Int. Cl.[2] H03F 3/04; H01L 27/02
U.S. Cl. 330—307 6 Claims



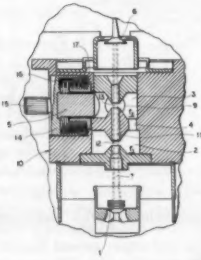
6. In a high frequency power amplifier, including the combination of a semiconductor device designed for power application, a ceramic capacitor and a heat sink, said semiconductor device being mounted on said heat sink, but electrically insulated therefrom by said ceramic capacitor disposed therebetween, said ceramic capacitor comprising a substrate, a dielectric ceramic layer provided with electrode layers on both of its surfaces, said ceramic layer being disposed on said substrate and joined at one of its electrode layers with said substrate to form a capacitor, and at least one mount hole passing through the capacitor and defining at least one hole in the electrode layer disposed between said substrate and said ceramic layer which has a diameter which is larger than that of the mount hole but which is concentric with said mount hole, the space formed between said mount hole and the hole of said electrode layer containing an insulating material to prevent a short circuit between electrode layers.

4,209,755

TUNABLE OSCILLATOR COMPRISING DUAL-CAVITY KLYSTRON

Guido Busacca; Roberto Burrascano; Vicenzo Meli, and Salvatore Migliaccio, all of Palermo, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jul. 28, 1978, Ser. No. 929,029
Claims priority, application Italy, Aug. 1, 1977, 26369 A/77
Int. Cl.[2] H01J 25/14; H03B 9/04
U.S. Cl. 331—83 4 Claims



1. A self-exciting oscillator comprising:

a klystron having a conductive body with a first cavity resonant at a first ultra-high frequency and a second cavity resonant at a second ultra-high frequency fractionally higher than said first frequency, said cavities being interconnected by a drift tube in line with a buncher gap formed by said first cavity and a catcher gap formed by said second cavity;

an electron gun disposed at one end of said body for emitting an electron beam successively traversing said buncher gap, drift tube and catcher gap;

a collector electrode disposed at an opposite end of said body for intercepting said beam;

feedback means regeneratively coupling said second cavity to said first cavity for transmitting said second frequency thereto, said feedback means being dimensioned to discriminate against said first frequency for suppressing transmission thereof to said second cavity;

tuning means at said second cavity for selectively modifying said second frequency independently of said first frequency within a limited range of adjustment smaller than the difference between said frequencies at the center of said range of adjustment; and

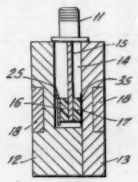
output means coupled to said second cavity.

4,209,756

CIRCULATOR COMPRISING A SPRING MEMBER BETWEEN A FERRIMAGNETIC PIECE AND AN ADJACENT CONDUCTOR

Yutaka Jin; Osamu Kasuga, and Tsutomu Kyuzaki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,580
Claims priority, application Japan, Nov. 2, 1976, 51-131887
Int. Cl.[2] H01P 1/38
U.S. Cl. 333—1.1 4 Claims



1. A circulator having at least three ports, comprising:

propagation means for propagating a signal supplied to a first of said ports to the other of said ports, said propagation means including a pair of conductors opposing each other and providing said ports therebetween;

circulating means coupled to said propagating means for circulating said signal from said first port to a second port and having a predetermined location with respect to said first port;

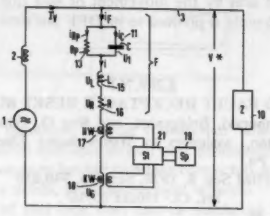
said circulating means comprising a ferrimagnetic piece disposed between said conductors and spaced from one of said conductors by a gap, and conductive spring means located in said gap for providing electrical connection between said ferrimagnetic piece and said one conductor and for biasing said ferrimagnetic piece into contact with the other of said conductors; and

a second conductive spring means located between said ferrimagnetic piece and the other of said conductors for positively providing electrical connection between said ferrimagnetic piece and said other of said conductors.

4,209,757
CIRCUIT FOR COMPENSATING HARMONIC CURRENTS IN AN ELECTRIC CONSUMER ARRANGEMENT

Michael Becker, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,917
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1977, 2716153
Int. Cl.² H03H 7/10, 7/24; H02J 1/02
U.S. Cl. 333—17 R **2 Claims**

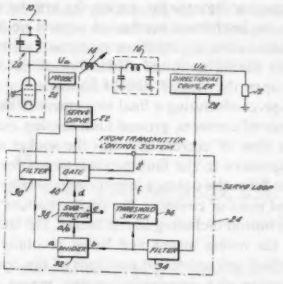


1. A circuit for compensating harmonic currents in a direct current electric supply for a consumer having at least one filter circuit for a harmonic which is connected in parallel to the load and which comprises, in at least one loop, an L-C-R series resonant circuit and a compensation transformer for providing inductively counter-coupled, controller supplementary current excitation and means responsive to the current in the loop for controlling the current in the transducer so as to reduce the harmonic voltage supplied to the consumer to a small value.

4,209,758
METHOD AND APPARATUS FOR THE AUTOMATIC MATCHING OF A TRANSMITTER TO AN ANTENNA

Ole Snedkerud, Windisch, and Jurg Wyss, Dottingen, both of Switzerland, assignors to Patelhold Patentverwertungs- & Elektro-Holding AG, Glarus, Switzerland

Filed Jun. 19, 1978, Ser. No. 916,539
Claims priority, application Switzerland, Jun. 22, 1977, 7643/77
Int. Cl.² H03H 7/40
U.S. Cl. 333—17 M **2 Claims**



1. A method for automatically matching the final stage of a transmitter to an antenna comprising the steps of:

detecting the anode a.c. voltage of a final stage tube of said final stage of said transmitter, rectifying said anode a.c. voltage and filtering out a modulation component from said rectified anode a.c. voltage;

generating a d.c. voltage which is proportional to the square root of the output power to said antenna and thereafter filtering out the modulation component from said d.c. voltage;

dividing said filtered, rectified, anode a.c. voltage by said filtered d.c. voltage so as to form a quotient signal which is proportional to the square root of the impedance of said final stage of said transmitter;

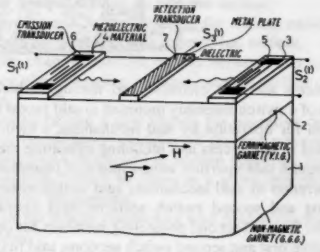
subtracting said quotient signal from a reference signal characterizing the square root of the nominal value of said final stage impedance so as to generate a difference signal; and

varying the value of a load coupling coil coupling said final stage to said antenna as a function of said difference signal when the power applied to said antenna is greater than a first predetermined minimum value and said anode voltage is greater than a second predetermined minimum value.

4,209,759
MAGNETOELASTIC SURFACE WAVE INTERACTION DEVICE

Gérard Volluet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 20, 1978, Ser. No. 952,955
Claims priority, application France, Oct. 25, 1977, 77 32054
Int. Cl.² H03H 9/26, 9/30, 9/04
U.S. Cl. 333—153 **11 Claims**



1. A magnetoelastic surface wave interaction device between first and second electrical signals to be treated simultaneously, comprising a non-magnetic substrate covered with a magnetic layer having two ends, this layer being magnetically polarised, two emission transducers having inputs to receive said first and second signals, and said respective transducers being arranged on said two ends for exciting said magnetic layer, each being intended to emit a magnetoelastic surface wave, said waves being contrapropagated along a common direction in the magnetic layer, and at least one detection transducer intended to detect variations in magnetic field in the vicinity of the surface of said magnetic layer, said variations being characteristics of the interaction between the two waves and representing the product thereof.

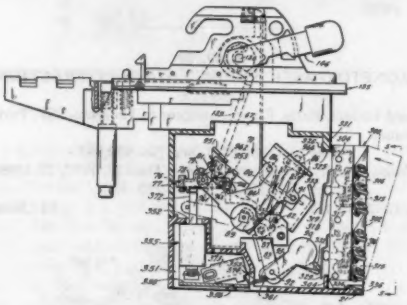
4,209,760
CIRCUIT BREAKER AND ACCESSORY DEVICES THEREFOR

Bernard Dimarco, Bellfontaine; Andrew J. Kralik, Marysville, both of Ohio, and Norman P. Perkins, Jr., Westminster, Md., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 25, 1978, Ser. No. 909,449
Int. Cl.² H01H 73/12, 75/00, 67/02
U.S. Cl. 335—17 **7 Claims**

1. A multipole circuit breaker including cooperating contact means for each pole thereof; a common mechanical operating mechanism for opening and closing the contact means of all poles of said circuit breaker simultaneously; said mechanism including a releasable cradle biased toward a tripped position wherein said mechanism is disabled from either closing said contact means or maintaining them closed and operable to a reset position wherein said mechanism is operable to close said

contact means and maintain them closed; said mechanism also including a latch for maintaining said cradle in said reset position; fault current responsive trip means operatively connected to said latch for tripping thereof to release said cradle upon the occurrence of predetermined fault current conditions thereby enabling said mechanism to open said contact means; housing means wherein said contact means, said operating mechanism and said trip means are disposed; said housing means defining an internal chamber wherein said mechanism is mounted; said contact means being disposed outside of said chamber; said housing means defining an external recess for receiving a switch assembly without opening said housing means; said housing means including aperture means extending between



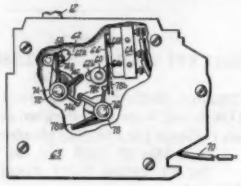
said recess and said chamber and through which operating means of a switch assembly mounted in said recess extends into position for operation by said mechanism; a switch assembly mounted in said recess and including operating means extending through said aperture means into said chamber in position for operation by said mechanism; said switch assembly including first and second switch sections; said operating means includes first and second projecting members for operating the respective first and second switch sections; said first projecting member being operated by said cradle as it moves between said tripped and reset positions; said second projecting member being operated by another portion of said mechanism as the latter opens and closes said contact means.

4,209,761

CIRCUIT BREAKER AUXILIARY SWITCH APPARATUS

Keith W. Klein, Simsbury, and Joseph M. Palmieri, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 7, 1978, Ser. No. 940,417
Int. Cl.[2] H01H *73/12, 75/00, 73/00*
U.S. Cl. 335—17 **5 Claims**



1. Auxiliary switch apparatus for a molded case circuit breaker having an internal trip unit including a pivotal trip actuating member and an operating mechanism including a pivotal manual operating handle, said apparatus comprising, in combination:

A. an accessory case affixed in side-by-side relation with the circuit breaker;

B. an auxiliary switch mounted within said accessory case, said switch including a switch actuating arm;

C. a first pin mounted by the breaker operating handle for extension into said accessory case;

D. a second pin mounted by the breaker trip actuating member for extension into said accessory case in proximate relation with said switch actuating arm, whereby tripping of the breaker is accompanied by pivotal movement of the trip actuating member in a direction to swing said second pin into switch actuating engagement with said arm; and

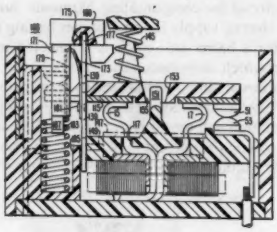
E. translating means movably mounted within said accessory case and activated into switch actuating engagement with said arm by the movement of said first pin as the breaker handle is pivoted to its OFF position.

4,209,762

GROUND FAULT RECEPTACLE RESET BUTTON

Bruce A. Samborski, Bridgeport, and Roy O. Wiley, Shelton, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 8, 1978, Ser. No. 940,810
Int. Cl.[2] H01H *83/02*
U.S. Cl. 335—18 **2 Claims**



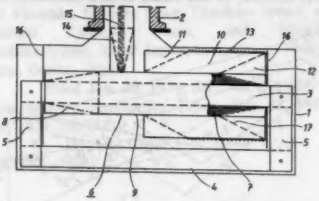
1. An electric receptacle for mounting in a wall outlet box for connecting an electrical load to the conductors of a power source, comprising socket means for receiving a plug of an electrical load, a first pair of cooperable contacts operable between open and closed positions, a second pair of cooperable contacts operable between open and closed positions, an operating mechanism including a contact arm carrying one contact of each pair of contacts and movable between open and closed positions of the contacts, a reset structure comprising a latch lever releasably latching the arm in the closed position, bias means engaging the arm for urging the arm to the open position when the latch lever is released, a pivot rib for the contact arm, the bias means urging the arm to pivot about the first pair of contacts during an initial movement of the arm when released to open the second pair of contacts and to then pivot about the pivot rib during a final movement of the arm to open the first pair of contacts, ground fault sensing means for monitoring the flow of current through the socket means, release means responsive to the fault sensing means for releasing the latch lever from the contact arm to sequentially open the first and second pairs of contacts, the reset structure also comprising a reset button including recess means, the latch lever being seated in the recess means and being pivotally movable between latched and unlatched positions of the contact arm, the reset structure also comprising spring means engaging the latch lever for holding said lever in the latched position, the reset structure comprising a button and a shaft, the shaft being an integral part of and extending from the button in the direction of movement of the reset structure, the latch lever extending from the button in a direction substantially parallel to the shaft, and the spring means being disposed between the shaft and the latch lever for holding the latch lever in the latched position and away from the shaft.

4,209,763

INDUCTION VOLTAGE TRANSFORMER

Otto Ottesen, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed May 12, 1978, Ser. No. 905,458
Claims priority, application Sweden, May 16, 1977, 7705668
Int. Cl.[2] H01F 15/14, 27/28
U.S. Cl. 336—70 5 Claims



1. In an induction voltage transformer which includes a grounded metal tank and an iron core positioned in said metal tank, the iron core having two legs connected at their respective ends by yokes, the improvement wherein

one leg of said iron core has an insulating body closely positioned therearound, said insulating body including layers of metal foil having successively shorter dimensions along the axial length of said core leg for each successively outermore layer so as to act as a capacitively controlled bushing,

a high voltage body positioned around a portion of said insulating body, said high voltage body including layers of a high voltage wire winding,

said layers of said high voltage wire winding of said high voltage body being successively displaced along the axial direction of said core leg so as to form a high voltage wire winding of rhomboid-type cross-section,

the innermost wire winding layer of said high voltage wire winding of rhomboid-type cross-section extending axially only to the same point as the outermost layer of said layers of metal foil in said insulating body, and

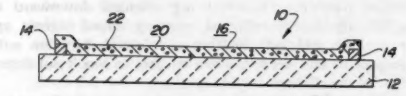
a low voltage wire winding wrapped around the outside of the outermost layer of said high voltage wire winding of said high voltage body.

4,209,764

RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Kenneth M. Merz, Gladwyne, and Howard E. Shapiro, Philadelphia, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Nov. 20, 1978, Ser. No. 962,235
Int. Cl.[2] H01C 1/012
U.S. Cl. 338—308 21 Claims



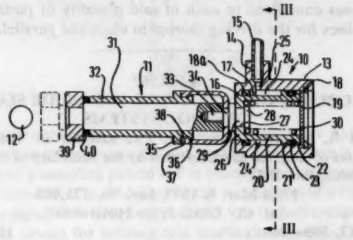
1. A resistor material comprising a mixture of a glass frit, particles of tantalum, and additive particles, said additive particles being present in up to approximately 50% by weight of the tantalum particles and selected from the group consisting of titanium, boron, tantalum oxide (Ta_2O_5), titanium oxide (TiO), barium oxide (BaO_2), zirconium dioxide (ZrO_2), tungsten trioxide (WO_3), tantalum nitride (Ta_2N), titanium nitride (TiN), molybdenum disilicide ($MoSi_2$), and magnesium silicate ($MgSiO_3$).

4,209,765

TIRE DEFLATION WARNING APPARATUS

William E. Mitchell, Coventry, England, assignor to Dunlop Limited, London, England

Filed Jan. 18, 1978, Ser. No. 870,463
Claims priority, application United Kingdom, Jan. 19, 1977, 02076/77
Int. Cl.[2] B60C 23/04
U.S. Cl. 340—58 6 Claims



1. A tire deflation warning apparatus for use with a tire having an inflation chamber, said apparatus comprising:

a pressure-responsive device comprising:

a tubular housing having an internal surface;

a piston mounted in said housing for sliding movement therein, said piston having an external surface;

a pressure chamber defined by and between said internal surface of said housing and said external surface of said piston;

said housing having a port therein for operative connection to the inflation chamber of the tire whereby the pressure of air in the tire at normal operating pressure can urge the piston to move in a given direction and relative to the housing;

a conduit for fluidly connecting said port to the inflation chamber;

means for biasing the piston in a direction opposite to said given direction; and

magnetic means arranged for operation to actuate a warning switch by movement of said piston in said opposite direction, said magnetic means comprising a push rod adapted for attachment to a wheel axle of a vehicle, said push rod being coaxial with said piston and being axially movable in response to movement of said piston in said opposite direction one axial end of said push rod being closer to the housing than the other axial end thereof, and a permanent magnet carried by said other end of said push rod; and

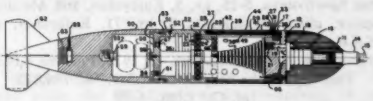
a keep magnet for holding said piston and said push rod together in contact for movement in unison.

4,209,766

TRANSDUCER

Willis A. Teel, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1964, Ser. No. 397,366
Int. Cl.[2] G01V 1/00; H04B 13/00; H04R 15/00
U.S. Cl. 367—155 16 Claims



1. A transducer comprising in combination,

a plurality of piezoelectric discs arranged along a common

axis of revolution in the order of increasing diameters in the aft to forward direction,

resilient means interposed between each of said piezoelectric discs for the support thereof with a predetermined relative degree of freedom of movement,

means effectively connected to the end ones of said piezoelectric discs for the urging thereof toward each other by compressing the resilient support means interposed therebetween and in such manner as to maintain the entire plurality thereof in a predetermined unitary geometrical configuration, and

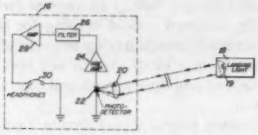
means connected to each of said plurality of piezoelectric discs for the driving thereof in electrical parallel.

4,209,767

ACOUSTO-OPTIC COUPLER FOR GLIDE SLOPE CONTROL SYSTEMS

David R. Flanders, Pottstown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1977, Ser. No. 773,883
Int. Cl.[2] G08G *5/00*; H04B *9/00*
U.S. Cl. 340—26 **11 Claims**



1. An acoustic-optic coupler for enhancing safety and control of glide slope direction between an approaching aircraft and a landing facility by communication of information indicative of acoustical pitch of an operating engine mounted upon the airframe of the aircraft to a landing signal officer at the facility, in combination, comprising:

light generating means formed to be mechanically coupled to the airframe of the aircraft, said light generating means being sensitive to airframe vibrations for projecting light radiation modulated thereby, a portion of said vibrations being induced by sonic perturbations of engine; and

optical receiver means formed to be mounted on the landing facility and optically connected to receive the light radiation from said light generating means for producing an acoustic output signal to the officer replicative of the acoustical pitch of the engine.

4,209,768

AIRCRAFT TAKE-OFF AND LANDING SYSTEM AND METHOD FOR USING SAME

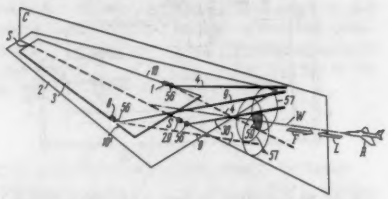
Nikolai G. Basov, ulitsa Dmitria Ulyanova, 3, kv. 113, Moscow; Igor A. Berezhnoi, ulitsa Tukhachevskogo, 253, kv. 18; Vyacheslav S. Vekshin, ulitsa Partizanskaya, 94, kv. 56, both of Kuibyshev; Vladimir A. Danilychev, ulitsa Profsojuznaya, 111, korpus 3, kv. 226, Moscow; Albert I. Elatontsev, ulitsa Sovetskoi Armii, 163, kv. 16, Kuibyshev; Vladimir V. Ignatiev, prospekt Kirova, 293, kv. 40, Kuibyshev; Vitaly D. Karyshev, ulitsa Sportivnaya, 5-25, kv. 5, Kuibyshev, and Alexandr K. Togulev, ulitsa Jubileinaya, 8, kv. 71, Kuibyshev, all of U.S.S.R.

Division of Ser. No. 622,762, Oct. 15, 1975, Pat. No. 4,063,218. This application May 6, 1977, Ser. No. 794,413
Int. Cl.[2] G08G *5/00*
U.S. Cl. 340—26 **6 Claims**

6. An aircraft take-off and landing system of the type which provides the pilot with information relating to the location of a desired landing platform and the glide slope thereto, comprising:

a source of electromagnetic radiation, positioned on the center line of said take-off and landing platform for producing a pencil beam of said electromagnetic radiation within preselected wavelength limits one of which is visible, said beam being directed skywards and having a divergence less than 5°;

a means for rotation of the beam of said source of electro-



magnetic radiation, connected to said source and ensuring uniform rotation of its beam, making said beam describe a closed conical surface as a circular cone; and

said source and said means for rotation being arranged such that the axis of rotation of said beam of electromagnetic radiation coincides with said glide slope;

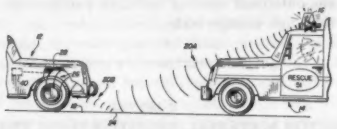
whereby a symbol produced by said beam of electromagnetic radiation, when an aircraft is on said glide slope, appears as a line in space rotating at a constant angular speed.

4,209,769

SYSTEM FOR PRODUCING WARNING SIGNALS PERCEIVABLE BY AN AUTOMOBILE DRIVER IN RESPONSE TO REMOTE WARNING SOUNDS

Jack E. Chronerberry, 4101 E. Fanfol Dr., Phoenix, Ariz. 85028

Filed Oct. 16, 1978, Ser. No. 951,722
Int. Cl.[2] G08G *1/00*
U.S. Cl. 340—34 **10 Claims**



1. A system for detecting warning sounds external to a vehicle and producing a corresponding warning signal to a driver of a vehicle, said system comprising in combination:

a. sound transducer means for receiving warning sound signals reflected from a roadway supporting said vehicle and producing an electrical audio frequency signal in response to said received warning sound signals, said sound transducer means being oriented downward to efficiently detect reflected warning sound signals approaching said vehicle from any lateral direction with respect to said vehicle while tending to block out detection of unreflected sound signals;

b. audio amplifier means responsive to said audio frequency electrical signal for amplifying said audio frequency electrical signal;

c. tone detector circuit means coupled to an output of said audio amplifier means for producing an output signal having a first level if the output signal produced by said audio amplifier is within a predetermined range of frequencies and a second level if said output of said audio amplifier means is not within said predetermined range of frequencies; and

d. warning indicator means responsive to said tone detector

circuit means for producing said warning signal in response to said first level, said warning signal being readily perceivable by the driver of said vehicle.

4,209,770

DRIVING TECHNIQUE FOR ELECTROCHROMIC DISPLAYS OF THE SEGMENTED TYPE DRIVING UNCOMMON SEGMENT ELECTRODES ONLY

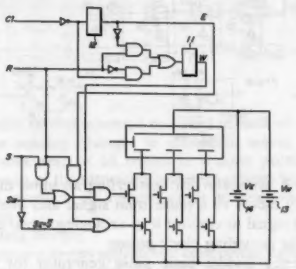
Hiroshi Hamada; Hiroshi Take; Yasuhiko Inami, all of Tenri; Sadatoshi Takechi, Nara, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 20, 1978, Ser. No. 871,040

Claims priority, application Japan, Jan. 21, 1977, 52/5992; Jun. 29, 1977, 52/78110

Int. Cl.[2] G06F *3/14;* G09F *9/32*

U.S. Cl. 340—763 **8 Claims**



1. A drive system for driving a electrochromic display cell to change the display pattern of said electrochromic display from a first display pattern to a second display pattern, said electrochromic display cell including an electrochromic material, a counter electrode and a predetermined number of display electrodes, different combinations of said display electrodes defining different desired display patterns, said drive system comprising:

a positive constant voltage source;

first switching means for connecting the positive terminal of said positive constant voltage source to selected ones of a first set of display electrodes to bleach said first set of display electrodes;

a negative constant voltage source; and

second switching means for connecting said negative constant voltage source to other selected ones of a second set of display electrodes to color said second set of display electrodes;

said first switching means switching to bleach said selected ones of said first set of display electrodes which are members of said first display pattern but not members of said second display pattern;

said second switching means switching to color said other selected ones of said second set of display electrodes which are not members of the first display pattern but are members of the second display pattern;

said first and second switching means maintaining unenergized the remaining ones of said display electrodes which are members of both said first and said second display pattern; and

means for controlling the switching of said first and said second switching means to color said other selected ones of said second set of display electrodes and to bleach said selected ones of said first set of display electrodes simultaneously, said first switching means switching to bleach said selected ones of said first set of display electrodes for a time period longer than a time period during which said second switching means switches to color said other selected ones of said second set of display electrodes.

4,209,771

CODE CONVERTING METHOD AND SYSTEM

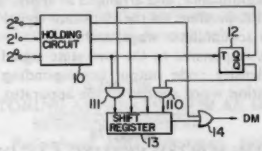
Masachika Miyata, Tokyo, and Eiichi Amada, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 19, 1978, Ser. No. 943,618

Claims priority, application Japan, Sep. 30, 1977, 52-116837

Int. Cl.[2] H04L *3/00*

U.S. Cl. 340—347 DD **7 Claims**



1. A code converting system in which a multivalue signal x_1 (x_1 being non-negative integer not greater than m being even number) of a sampling period mT is received and subjected to density conversion to be delivered out in the form of a train of m binary signals of a sampling period T, the system comprising a holding circuit for holding said multivalue signal x_1 at the period mT, logic means connected to said holding circuit serving to invert the output state of said logic means when said multivalue signal assumes an odd number, and operation means receiving the output of the holding circuit and said output q_i (q_i being 1(one) or zero) of the inverting means and delivering out a Z-transform $\beta(Z)$ of the binary signals to be delivered out, said Z-transform being expressed as,

$$Y(Z) = \sum_{i=0}^{m} \hat{H}(x_i, q_i Z) Z^{-mi}$$

where $\hat{H}(x_i,q_i,Z)$ represents a polynomial of the order related to Z^{-1} less than $(m-1)$ which has non-zero terms having each a coefficient of 1(one) and which satisfies $\hat{H}(k,q_i,1)=k$, $\hat{H}(k,q_i,Z)=Z^{-(m-1)}\hat{H}(k,q_i,(1/Z)$ for k being even number, and $H(k,0,Z)=Z^{-(m-1)}\hat{H}(k,1,1/Z)$ for k being an odd number.

4,209,772

Patent Not Issued For This Number

4,209,773

CODE CONVERTERS

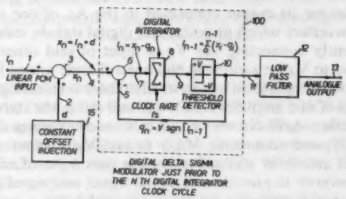
John D. Everard, Ipswich, England, assignor to The Post Office, London, England

Filed Nov. 28, 1977, Ser. No. 855,784

Claims priority, application United Kingdom, Dec. 1, 1976, 50096/76

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **5 Claims**



1. Apparatus for converting PCM information into a pulse density code, the PCM information consisting of parallel words of m bits expressed in two's complement form, the apparatus comprising:

(a) an offset signal generator providing input ports to the

said apparatus and arranged to add an offset signal to an input signal,

(b) an accumulator having at least m+1 stages,

(c) means responsive to the digit stores in the m+1th stage of the accumulator after the immediately preceding accumulation operation, to produce a two-state signal,

(d) connection means arranged to apply output words from the offset signal generator to the m accumulator stages of lower significance, and arranged to apply, simultaneously, a signal dependent on the two-state signal to at least the m+1th accumulator stage, and

(e) means responsive to the two-state signal to produce a pulse density code output corresponding to the PCM information word applied to the apparatus.

4,209,774

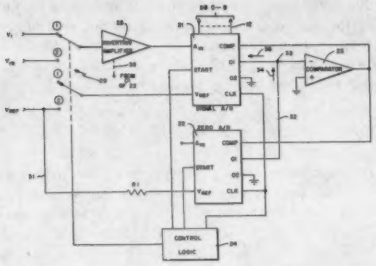
APPARATUS FOR CONVERTING A DC OR ANALOG SIGNAL TO A DIGITAL SIGNAL WITH MINIMUM DRIFT

Robert K. Bendler, Mountain View, Calif., assignor to Acurex Corporation, Mountain View, Calif.

Continuation of Ser. No. 708,072, Jul. 23, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,210

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 CC **2 Claims**



1. Apparatus for sensing a dc signal, V_{in}, from a signal source which is a resistance temperature detector (RTD) having a predetermined zero temperature value and converting it to a digital signal while minimizing the effects of drift comprising: dc amplifier means susceptible to drift for receiving and amplifying said dc signal, V_{in}; signal generating means for simulating a signal, V_1, corresponding to said zero value of said dc signal; a pair of successive approximation type analog to dibital (A/D) converters including a comparator, each of said A/D converters having a digital to analog (D/A) converter output connected together and to a common input of said comparator, the output of said comparator being connected to the comparator inputs of each A/D converter, each of said A/D converters also having analog voltage inputs A_{in}, start inputs and reference voltage inputs, V_{REF}, said dc amplifier means having its output connected to the A_{in} of one of said A/D converters which provides said digital signals; means for permanently connecting the V_{REF} input of said other A/D converter to V_{REF}; switching and control logic means having two phases of operation and in its first phase connecting V_1 to the input of said amplifier means and activating the start input of said other A/D converter and in its second phase disconnecting V_1 and connecting V_{REF} to said V_{REF} input of said one A/D converter and activating the start input of said one A/D converter to provide said digital signal; said signal generating means including a bridge network having a common voltage supply across two legs, one leg comprising said RTD in series with a resistor having a value R, said other leg comprising a resistor having a value R in series with a resistor R_o having a resistive value which corresponds to the zero value of said RTD, the voltage V_1 being taken off the other leg between the two series resistors and V_{in} being taken off between the series resistors of said one leg.

4,209,775

D-A CONVERTER UTILIZING A MAIN AND AUXILIARY PULSE GENERATOR TO CONTROL THE DUTY FACTOR OF AN AVERAGED PULSE TRAIN SIGNAL

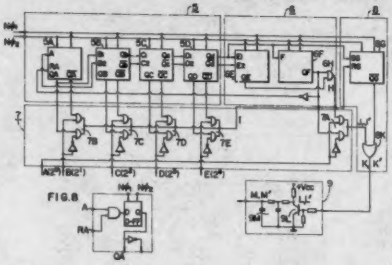
Kazumi Kawashima, Takatsuki, and Yukio Koyanagi, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 22, 1978, Ser. No. 944,898

Claims priority, application Japan, Sep. 29, 1977, 52-117484

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 DA **2 Claims**



1. A D-A converter for converting an input digital signal into a duty factor of a pulse train signal and averaging said pulse train signal to convert it to an analog signal comprising:

means for providing clock pulses;

a frequency divider basic pulse generator for frequency-dividing said clock pulses to generate a plurality of basic pulses having respective different weighted pulse widths produced by $2^0, 2^1, 2^2, \ldots 2^n$ divider positions during a 2^n bit period, where n is a positive integer and a bit period corresponds to the width of a basic pulse produced by the 2^0 divider position;

reset means for controlling said basic pulse generator to render said basic pulse generator inoperative during only one bit period following said 2^n bit period and subsequently rendering said basic pulse generator operative after a (2^n+1) bit period;

an auxiliary basic pulse generator for generating auxiliary basic pulses during said one bit period when said basic pulse generator is inoperative at a cycle period which is at least twice as long as said (2^n+1) bit period;

a gate circuit for selecting said basic pulses by high order bits of said input digital signal and selecting said auxiliary basic pulses by at least one low order bit of said input digital signal;

an output pulse signal generator controlled by the selected outputs from said gate circuit to produce an output pulse signal having a duty factor which changes in accordance with the content of said input digital signal; and

a low-pass filter for averaging said output pulse signal to convert it to an analog signal.

4,209,776

VIBRATORY AND ULTRASONIC FENCE INTRUDER DETECTION SYSTEM

Richard M. Frederick, Minneapolis, Minn., assignor to Electronic Surveillance Fence Security, Inc., Minneapolis, Minn.

Filed Jul. 24, 1978, Ser. No. 927,476

Int. Cl.² G08B *13/02, 13/16*

U.S. Cl. 340—541 **9 Claims**

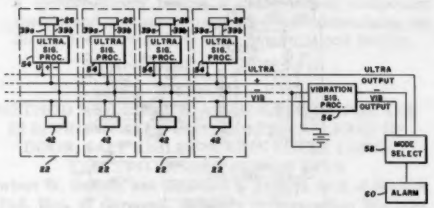
1. In combination with a fence enclosing an area to be protected against intrusion and supported by a plurality of spaced rigid, substantially vertical fence posts, an intrusion detection system comprising:

a plurality of sections of relatively rigid electrical conduit supported on and in contact with the fence serially therealong and independently of the fence posts so that rela-

tively small vibrations of the fence cause vibration of the conduit in contact therewith;

a plurality of housings, each interposed between and having a connection with two adjacent sections of the conduit so that the sections are serially connected together by the housings;

a vibration sensor secured in each of the housings and responsive to vibrations transmitted to the housing in which it is located, each of the vibration sensors being effective to produce a vibratory electrical signal in response to the conduit being vibrated;



an ultrasonic intrusion sensor mounted in each of the housings for sensing changes in ultrasonic waves resulting from movement of an object in a zone proximate the fence, each of the ultrasonic intrusion sensors being effective to produce an output signal in response to said changes;

an indicating device;

first connecting means operatively connecting a group of the vibration sensors to the indicating device; and

second connecting means operatively connecting a group of the ultrasonic intrusion sensors to the indicating device;

whereby the indicating device in response to said vibratory signals and/or said output signals, indicates an intrusion.

4,209,777

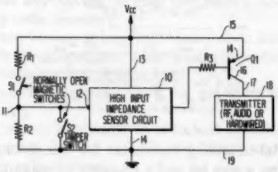
NON-COMPROMISABLE INTRUSION SENSOR CIRCUIT

Richard L. Morrison, Petersburg, Tenn., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Apr. 4, 1978, Ser. No. 893,384

Int. Cl.[2] G08B *13/08*

U.S. Cl. 340—547 **6 Claims**



1. In an intrusion sensor system for protecting a building opening having at least one moveable closure member, and a system magnet and first magnetically operated switch mounted and oriented for relative movement with respect to each other and/or said building opening, and an alarm transmitter connected to said magnetically operated switch for transmitting an alarm signal to a receiving station upon relative movement between said magnet and said magnetically operated switch, the improvement in rendering said intrusion sensor circuit non-compromisable from the exterior of said building by a compromising magnet comprising,

a further magnetically operated switch positioned a short distance away from said first magnetic switch and along a path defined by the constrained movement of said moveable closure member relative to said system magnet,

said magnetic switches being normally of the opposite state when in a protecting position relative to said system magnet such that one of said magnetic switches is operated by the nearness of said system magnet to thereby arm the system and movement of said first magnetic switch away from said system magnet so as to position the other of said magnetic switches adjacent said system magnet energizes said alarm regardless of the condition of said first magnetic switch, and

a sensing circuit for sensing the condition of said magnetic switches and producing said alarm signal.

4,209,778

YARN MONITORING APPARATUS FOR AN OPEN-END SPINNING TURBINE

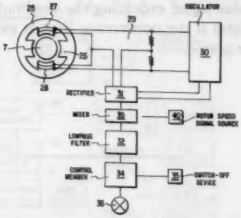
Heinz Wehde, Rothenberg; Fritz Schumann, and Burkhard Wulfhorst, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 862,046

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755624

Int. Cl.[2] D01H *13/14, 13/22;* G08B *21/00*

U.S. Cl. 340—677 **12 Claims**



1. A system for monitoring the production of yarn in an open-end spinning turbine, the turbine including a rotor rotatably mounted in a bearing and means elastically supporting the bearing so that the delivery of fiber material to the turbine and the production of yarn therefrom creates a spinning imbalance in the rotor which causes the bearing to undergo an oscillatory radial deflection at a frequency equal to the rate of rotation of the spinning imbalance, the spinning imbalance having, under normal operating conditions, a predetermined rate of rotation, different from the rate of rotation of the rotor, said system comprising: a measuring value sensor disposed for monitoring the radial deflections of the bearing and producing a measuring signal at least a component of which is representative of the spinning imbalance; and evaluation means connected to receive at least that component of the measuring signal which is representative of the spinning imbalance and responsive to a change in the frequency of such signal component for providing an indication of the occurrence of a deviation from normal operating conditions constituted by at least a break in the yarn of an operating state which adversely influences yarn quality.

4,209,779

METHOD OF MONITORING EQUIPMENT AND SYSTEM FOR CARRYING OUT THE METHOD

Wolfgang Beck; Horst Herzog, both of Erlangen, and Günter Stipsits, Neunkirchen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,287

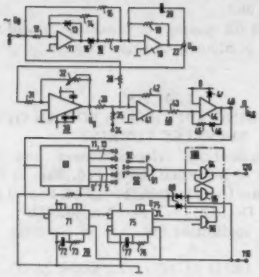
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713640

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—683 **9 Claims**

1. Method of monitoring equipment wherein a measured value signal in the form of an electrical a-c signal is fed to the

measuring channel of an electric circuit and a mean value output signal is formed by the electronic circuit in accordance with the amplitude of the measured value signal, which comprises setting an amplitude limit as a function of the mean value signal, automatically adapting the amplitude limit with a pre-



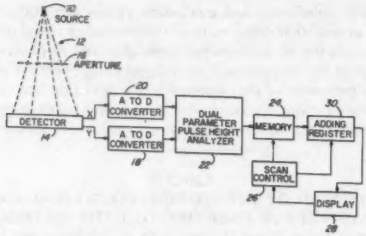
determined time constant to changes in the mean value signal, setting a limit of a number of occurrences amplitudes of the measured value signal exceeding the amplitude limit, and activating an alarm if the occurrence limit is surpassed within a settable time period.

4,209,780

CODED APERTURE IMAGING WITH UNIFORMLY REDUNDANT ARRAYS

Edward E. Fenimore, and Thomas M. Cannon, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 2, 1978, Ser. No. 902,183
Int. Cl.[2] G01T *1/00*
U.S. Cl. 340—146.3 F **15 Claims**



1. A device for imaging a source of nonfocusable radiation comprising:

a uniformly redundant array aligned to aperture image said source of nonfocusable radiation;

x-ray detector means for detecting said nonfocusable radiation imaged by said uniformly redundant array;

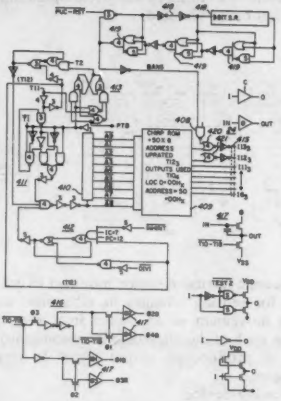
means for balance correlating information from said means for detecting to generate a decoded image of said source of nonfocusable radiation.

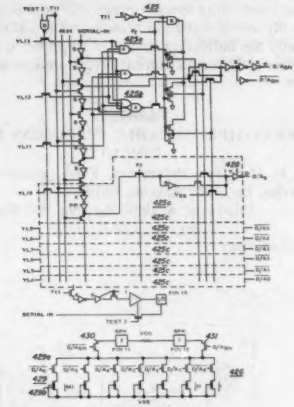
4,209,781

MOS DIGITAL-TO-ANALOG CONVERTER EMPLOYING SCALED FIELD EFFECT DEVICES

Ajay K. Puri, Lubbock; Michael J. Caruso, Houston; Stanley M. Dennison, Houston, and Jay Brown, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 19, 1978, Ser. No. 907,365
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 DA **4 Claims**





1. An digital-to-analog converter for converting a digital input, including a sign bit and a plurality of magnitude bits, to an analog signal representative of human speech, said converter being integrateable on a monocrystalline semiconductor substrate and comprising:

(a) first plurality of scaled field effect semiconductor devices each of which has a control electrode and two current carrying electrodes, the width to length ratio of the active area of a first of said devices being approximately twice that of a second of said devices, the width to length ratio of said second devices being approximately twice that of a third of said devices and correspondingly for the remainder of said devices;

(b) second plurality of switching field effect semiconductor devices, each of which has a control electrode and two current carrying electrodes;

(c) first means, coupling one of the current carrying electrodes of each of said first plurality of devices to one of the

current carrying electrodes of each of said second plurality of devices;

(d) second means, coupling each of the remaining current carrying electrodes and each of the control electrodes of each of said first plurality of devices to a first common node;

(e) third means, coupling each of the remaining current carrying electrodes of each of said second plurality of devices to a second common node;

(f) control means, coupling said plurality of magnitude bits to a respective control electrode of one of said second plurality of devices; and

(g) output means for coupling said second common node to a speaker means having a center-tapped component therein, and responsive to said sign bit for determining the direction of current flow through a voice coil therein.

4,209,782

METHOD AND CIRCUIT ARRANGEMENT FOR THE ELECTRONICALLY CONTROLLED RELEASE OF DOOR, SAFE AND FUNCTION LOCKS USING ELECTRONICALLY CODED KEYS

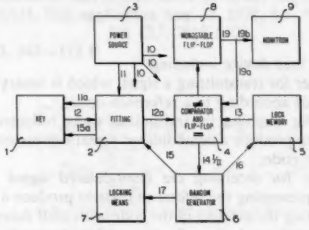
Norbert W. Donath, and Bernhard K. Donath, both of Munich, Fed. Rep. of Germany, assignors to Maximilian Wachtler, Sierksdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 821,808, Aug. 4, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,216

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635180

Int. Cl.[2] **E05B** *49/00;* **H04Q** *9/00*

U.S. Cl. 340—147 MD **34 Claims**



1. An electronic security system comprising:

at least one key having at least one binary code stored in memory cells therein;

a central key having at least one binary code stored in memory cells therein and also additional information indicative of its character as a central key;

and at least one electronic lock for use with said keys and comprising:

a locking means actuatable to unlocked condition;

a lock memory having at least two binary codes stored in memory cells therein;

a comparator for comparing a code in said key memory and a code in said lock memory when the key is presented to the lock and for providing a signal indicative of coincidence or non-coincidence between said codes, said comparator including an inhibitor stage actuatable by a proper central key;

a random generator operable in response to the signal indicative of coincidence from said comparator to provide new coincident codes for said key memories and said lock memory and subsequently to actuate said locking means;

said comparator being further operable upon coupling said central key with said lock to enable said random generator after the central key is identified as a proper central key within a predetermined interval of time to provide a signal indicative of coincidence to be actuatable to provide new codes to said key and/or to said lock, when a subsequent key is coupled with said lock, whereby said lock and a key provided with an original non-coincident code can be provided with a new coincident code, whereas a key provided with an original coincident code is rendered non-coincident and unusable by one-sided feeding of the new codes or by erasing the present codes in the key or in the lock.

4,209,783

OBJECT IDENTIFICATION SYSTEM

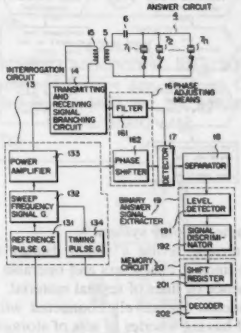
Masumi Ohyama; Johji Sakuragi, both of Tokyo; Masanori Aono, Sagamihara, and Takeshi Ochi, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 22, 1978, Ser. No. 889,114

Claims priority, application Japan, Mar. 30, 1977, 52-34374

Int. Cl.[2] **G08G** *1/01;* **G01S** *9/56;* **H04Q** *9/00*

U.S. Cl. 340—152 T **10 Claims**



1. An object identification system comprising:

an interrogation circuit including a sweep frequency signal generator for generating a sweep frequency signal;

a transmitting/receiving duplex circuit connected to said interrogation circuit;

transmitting/receiving antenna means which is connected to said transmitting/receiving duplex circuit and transmits said sweep frequency signal as an interrogation signal;

an answer device which includes a plurality of resonators with different resonance frequencies connected in parallel one another and an answer antenna means connected in parallel with said resonators, and which is fixed on an object to be identified and transmits resonance answer signals corresponding to the resonances of said resonators in response to said interrogation signal toward said transmitting/receiving antenna means;

phase adjusting means which is connected to said transmitting/receiving duplex circuit and said interrogation circuit and adjusts the phases of the sweep frequency signal from said sweep frequency signal generating circuit and said resonance answer signal to have a phase difference of substantially 0 or 180 degrees;

a detector for detecting a ringing answer signal included in said resonance answer signal from the output of said phase adjusting means;

a separation circuit for separating the ringing answer signals included in the output of said detector;

a signal extracting circuit for extracting binary answer signals corresponding to said separated ringing answer signals; and

a memory circuit for storing said binary answer signals.

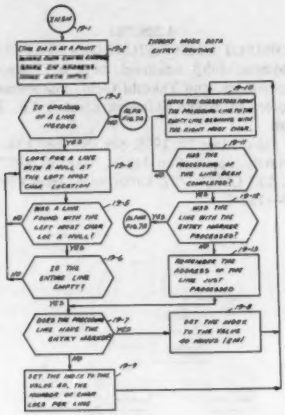
4,209,784
PROCESSOR CONTROLLED EDITOR TERMINAL SYSTEM AND METHOD

Murray Sumner, Mamaroneck, N.Y., and Sigitas J. Liaukau, Huntington, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 538,201, Jan. 2, 1975, abandoned. This application Dec. 16, 1976, Ser. No. 757,101

Int. Cl.[2] **G06F** *3/14*

U.S. Cl. 340—711 **5 Claims**



1. In a character display system,

(a) display means having a visual display for displaying successive lines of characters and operable for representing a sequence of lines of textual material,

(b) storage means operatively connected with said display means and having a series of sets of storage locations for storing character-representing signals representing a sequence of lines of characters of an existing text, and having control means for controlling said display means to display a sequence of lines of characters of the existing text on the visual display in accordance with character-representing signals at a sequence of said sets of storage locations of said storage means whereby respective storage locations of said sequence of sets of storage locations correspond to respective character positions of the successive lines of characters on said visual display,

(c) processing means connected with said storage means for effecting the transfer of character-representing signals representing a block of existing text from storage locations corresponding to a first sequence of lines on said visual display to storage locations corresponding to respective second sequential lines on said visual display offset downwardly relative to the respective lines of the first sequence while maintaining each transferred character-representing signal in a storage location corresponding to the same lateral location with respect to said visual display, and

(d) manually operable means operable in an insert operation for selecting insertion points on the sequence of lines of the existing test displayed by said display means including insertion points intermediate the ends of the lines of characters for insertion of further characters into the existing text,

(e) said processing means being coupled with said manually operable means and being automatically responsive to the selection of an insertion point intermediate the ends of one of said lines of existing text on said visual display for determining the existence of an interference by the existing text with the insertion of new text at said insertion point and for ascertaining the character locations of said storage means containing character-representing signals corresponding to existing text beyond said insertion point and for shifting the character-representing signals of storage locations containing such interfering existing text to new storage locations such that the block of interfering existing text beyond said insertion point is displayed on a sequence of lines offset downwardly relative to said insertion point with such block of interfering existing text being shifted downwardly without change in the lateral locations of the individual displayed characters of the bodily downwardly shifted text.

4,209,785
CORRELATION ARRANGEMENTS

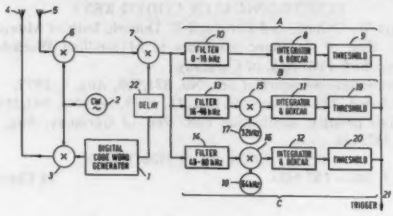
Eric L. C. White, Iver, England, assignor to E M I Limited, Hayes, England

Filed Mar. 1, 1979, Ser. No. 16,497

Claims priority, application United Kingdom, Mar. 3, 1978, 8485/78

Int. Cl.[2] **G01S** *9/02*

U.S. Cl. 343—7 PF **6 Claims**



1. A radar fuze device including:

a transmitter for transmitting a signal which is binary phase modulated according to a reference code;

a receiver for receiving the transmitted signal reflected from a target to produce a demodulated signal representing the reference code;

a multiplier for receiving the demodulated signal and a signal representing the reference code to produce a signal representing the product of the code with itself delayed by an amount dependent on the range of the target from the fuze device; and

an integrator for integrating the product signal over the duration T of the reference code to produce a signal representing the autocorrelation function of the reference code; and

wherein, in order to reduce the effect, on the autocorrelation, of a Doppler frequency shift of the received signal, which shift would otherwise introduce a Doppler frequency component into the signal integrated by the integrator, the device further includes, prior to the integrator,

means for causing mixing of a further frequency component with the Doppler frequency component so that the signal integrated by the integrating means has a component, derived from the Doppler frequency component, of frequency f, where

fT is less than $\frac{1}{4}$.

4,209,786
NEAR CARRIER AM-FM CALIBRATION TECHNIQUE

Thomas A. Barley, and Gustaf J. Rast, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

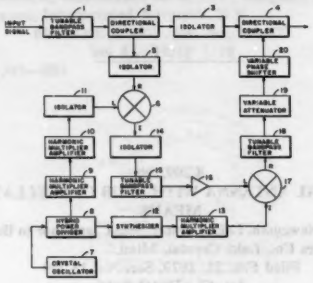
Filed Jan. 15, 1979, Ser. No. 3,175

Int. Cl.[2] **G01S** *7/40;* **G01R** *11/02;* **H03F** *3/14;* **H03C** *1/52*

U.S. Cl. 343—17.7 **7 Claims**

1. A method of generating a near carrier single sideband comprising the steps of sampling a main carrier signal; generating a driving signal; mixing the driving signal and the main

signal for producing a combined signal; using the driving signal to supply a synthesizer so as to produce an offset frequency from the main signal; and adding the combined signal to the



offset frequency and sending them through a bandpass selecting device so as to select a single sideband and sending it back to the main signal for combining to produce a near carrier single sideband.

4,209,787

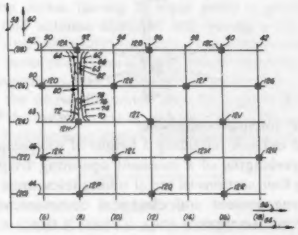
METHOD FOR MONITORING THE LOCATION OF MONITORED OBJECTS

Charles C. Freeny, Jr., Ft. Worth, Tex., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 568,671, Apr. 16, 1975, Pat. No. 4,112,421. This application Aug. 31, 1978, Ser. No. 938,477

Int. Cl.[2] G01S *3/02*

U.S. Cl. 343—112 R **11 Claims**



1. A method for monitoring the location of monitored objects within a monitored area, comprising the steps of:

positioning signpost units within the monitored area, each signpost unit being positioned at the intersection of a first coordinate grid line and a second coordinate grid line with the first coordinate grid lines being spaced generally in a first direction and extending generally in a second direction and with the second coordinate grid lines being spaced generally in the second direction and extending generally in the first direction, the first coordinate grid lines being assigned numbers sequentially increasing in the first direction and the second coordinate grid lines being assigned numbers sequentially increasing in the second direction, each signpost unit having a signpost code encoded therein uniquely identifying the signpost unit and having a first portion corresponding to the number assigned to the first coordinate grid line and a second portion corresponding to the number assigned to the second coordinate grid line of the intersecting first and second coordinate grid lines defining the position of the signpost unit;

transmitting the signpost codes via the signpost units;

receiving the signpost codes at the monitored objects, each received signpost code being a new signpost code and the signpost code received prior to the new signpost code being the last signpost code; and

determining at the monitored object the location of the monitored object within the monitored area, comprising the steps of:

selecting one of the new signpost code and the last received signpost code as a reference signpost code;

comparing the first portion of the new signpost code with the first portion of the last signpost code and comparing the second portion of the new signpost code with the second portion of the last signpost code;

determining the monitored object to be located at the signpost unit identified via the reference signpost code in response to a comparison indicating the first and the last portions of the new signpost code and the last received signpost code are the same; and

determining the direction of the monitored object from the signpost unit identified via the reference signpost code in response to a comparison indicating a difference between any one of the comparisons of the first and last portions of the new signpost code and the last received signpost code.

4,209,788

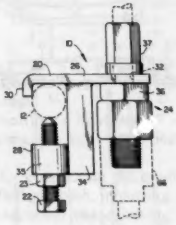
ANTENNA MOUNTING BRACKET

George W. Plantier, 14 Farview Ave., Wolcott, Conn. 06716

Filed Jan. 13, 1978, Ser. No. 869,249

Int. Cl.[2] H01Q *1/32*

U.S. Cl. 343—713 **4 Claims**



1. The combination comprising an elongated generally horizontally extending external rear view mirror support member on a motor vehicle and an antenna mounting bracket releasably secured to said mirror support member, said mounting bracket including a mounting frame, an antenna bushing assembly carried by said mounting frame, and a clamping fastener releasably securing said mounting frame to the mirror support member, said mounting frame including a substantially flat horizontally disposed plate having a downwardly projecting lip extending along its rear edge and a generally L-shaped member having one leg connected in fixed position at its upper end to a central portion of the lower surface of said plate in forwardly spaced relation to said rear edge and extending downwardly beyond the lower surface of said plate, said L-shaped member having another leg connected in fixed position to a lower end position of said one leg and extending rearwardly therefrom in spaced relation to said lower surface, said lip and said one leg defining opposing surfaces receiving the support member therebetween and engaging generally opposite sides of the support member, said clamping fastener threadably engaged with and extending upwardly through said other leg in axially normal relation to said lower surface, said clamping fastener having a free upper end in direct clamping engagement with the support member, said clamping fastener being threadably movable relative to said other leg and generally toward and away from said lower surface, the axis of said clamping fastener intersecting said lower surface generally midway between said opposing surfaces, said plate having a hole there-

through intermediate said one leg and the forward edge of said plate, said antenna bushing assembly including a cable connecting member disposed at one side of said plate and having a stepped bore extending therethrough in coaxial alignment with said hole, said stepped bore defining an axially outwardly facing first bearing surface, an electrical connector having an axially elongated stem disposed within and extending from said bore through said hole and beyond said plate, said electrical connector having an enlarged collar defining a second bearing surface disposed in opposing relation to said first bearing surface, an antenna coupling nut for electrically coupling to and supporting an antenna rod disposed at the side of said plate opposite said one side and threadably engaged with the extending end of said stem, and means for electrically insulating said electrical connector and said coupling nut from said plate and said cable connecting member.

4,209,789

ROTATABLE AERIAL INSTALLATION MOUNTED ON A MAST WITH REMOTE MECHANICAL DRIVE

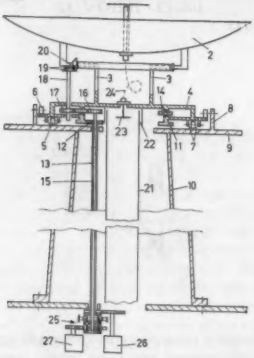
Ole Snedkerud, Windisch, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sep. 25, 1978, Ser. No. 945,091

Claims priority, application Switzerland, Sep. 30, 1977, 11957/77

Int. Cl.[2] H01Q 1/34, 3/03

U.S. Cl. 343—765 5 Claims



1. In a rotatable aerial installation, especially for ship-borne and ground satellite stations of the type having a mast at the upper end of which rotatable basket means contains the transmitting/receiving aerial, the improvement comprising

a turntable within the basket at the top of the mast mounted for rotation about a vertical axis,

said turntable comprising a first rim with gearing for azimuth displacement of the aerial and a second rim with internal/external, double-gearing for elevational displacement of the aerial,

differential gearing means comprising two drive shafts and two driven shafts,

means for separately driving each of the drive shafts of the differential gearing,

means for driving said first rim by means of one of the drive shafts of the differential gearing means,

means for driving the second rim from the other of said drive shafts of the differential gearing means,

a fixed wave guide extending upwardly to said turntable and concentric with the rotational axis of the latter,

a quarter-wave joint mounted on the turntable and surrounding the upper end of said wave guide with a clearance therebetween,

a wave guide probe extending from said turntable into said wave guide adapted to transmit signals between the wave guide and the aerial.

4,209,790

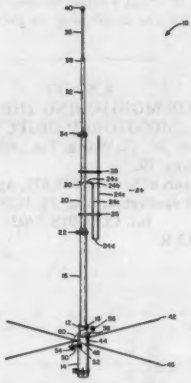
VERTICAL ANTENNA WITH STUB CANCELLATION MEANS

Donald R. Newcomb, Lake Crystal, Minn., assignor to Butternut Electronics Co., Lake Crystal, Minn.

Filed Feb. 21, 1979, Ser. No. 13,209

Int. Cl.[2] H01Q 9/16

U.S. Cl. 343—830 11 Claims



2. Vertical antenna comprising:

a. vertical radiator including a height of substantially three half wavelengths of a resonant operating frequency including four sections of metal tubing telescoped into frictional engagement and electrical communication with each of said sections;

b. cancellation stub electrically connected to said vertical radiator substantially three-quarters wavelength from a feed point at a base of said vertical radiator, said cancellation stub comprising a first downwardly extending quarter wavelength element, a second upwardly extending half wavelength element parallel to said first element, a U-shaped element connecting said first and second element, said cancellation stub spaced from said vertical radiator by less than one-eigth wavelength;

c. tubular insulator frictionally engaged over and to said base of said vertical radiator;

d. tubular metal mounting post frictionally engaged over and to said tubular insulator;

e. plurality of at least two radials extending a quarter wavelength outwardly from said tubular mounting post and perpendicular to said vertical radiator; and,

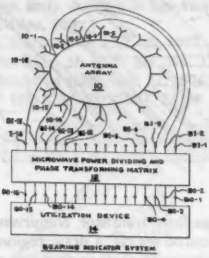
f. impedance matching coil electrically connected between said feed point and said plurality of radials whereby a coaxial cable transmission line connects in parallel across said matching coil and excites said vertical antenna with electromagnetic radio frequency currents substantially equal in frequency to said resonant frequency of said vertical antenna thereby radiating a vertically polarized radio frequency signal.

4,209,791

ANTENNA APPARATUS FOR BEARING ANGLE DETERMINATION

Carl W. Gerst, Skaneateles; Hugh A. Hair, Fayetteville, and Stig L. Rehnmark, Skaneateles, all of N.Y., assignors to Anaren Microwave, Incorporated, Syracuse, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,977
Int. Cl.[2] H01P 1/18
U.S. Cl. 343—854 8 Claims



1. Antenna apparatus for generating a representation of a bearing angle comprising: antenna array means having N antenna elements equispaced about an arc of a circle greater than 180° in a plane for receiving microwave energy, where N is greater than 4, said antenna array means comprising a disk of conductive material, said disk having a plurality of slots, each of said slots extending radially outward from a different point displaced from the center of the disk to the periphery thereof, the width of each slot monotonically increasing from the point to the periphery of the disk and means at each of the points for accepting microwave energy arriving in the slot from the periphery of the disk; microwave power dividing and phase transforming means having N input ports respectively connected to said antenna elements and having a set of output ports; and a utilization device having input ports connected to the output ports of said microwave power dividing and phase transforming means, said utilization device including means for measuring the phase difference between signals from at least one pair of the output ports of said microwave power dividing and phase transforming means, the phase difference representing the bearing angle.

4,209,792

ANTENNA CABLE DRIVE AND STORAGE DRUM WITH STOP MECHANISM

David T. Carolus; Ralph W. Edwards, both of Dayton, and Paul C. Morrin, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1978, Ser. No. 962,923
Int. Cl.[2] H01Q 1/10
U.S. Cl. 343—903 3 Claims

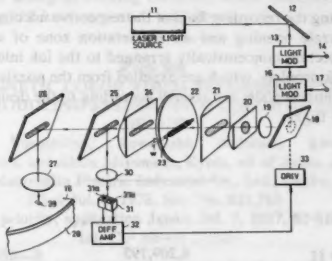
1. An antenna cable drive and storage mechanism comprising; a stationary housing; a reversible rotatable drive and storage drum mounted on said housing; means for rotating said drum; a cable drivingly connected to said drum and being stored thereon and being extended from and retracted into said housing by rotation of said drum in one direction or the other during a predetermined number of revolutions of said drum in each respective direction; and drum rotation responsive means drivingly connected to said drum and selectively operatively connectable with said housing for imposing a rotational resistance to said drum if said drum is rotated more than the predetermined number in either direction.

4,209,793

APPARATUS FOR OPTICALLY RECORDING SIGNALS ON A RECORDING MEDIUM

Ichiro Ueno, Isehara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 14, 1978, Ser. No. 969,444
Claims priority, application Japan, Dec. 17, 1977, 52/152253; Mar. 17, 1978, 53/30848
Int. Cl.[2] G01D 15/14
U.S. Cl. 346—108 6 Claims



1. An apparatus for optically recording signals on a recording medium, comprising:

a light source for emitting a light beam;

means for modulating the light beam with a signal to be recorded;

an optical system for conducting the modulated light beam through a specific light path, imparting to the light beam a specific cross-sectional shape having at least two end parts, and for projecting the light beam onto the recording medium, the optical system including a restricting plate having a slit or hole for restricting the cross-sectional shape of the modulated light beam to the specific shape;

light detecting means comprising a pair of light detectors positioned to be irradiated by the modulated light beam having the restricted cross-sectional shape for detecting the intensities of said light beam in the vicinity of the two end parts thereof; and

controlling means for detecting any difference between the outputs of the two light detectors and for controlling the optical system in response to the detected output difference so that the light intensity distribution of the modulated light beam of the restricted cross-sectional shape is maintained symmetrical with respect to the center of the distribution.

4,209,794

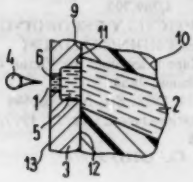
NOZZLE PLATE FOR AN INK RECORDING DEVICE

Erich Kattner, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,647
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728657
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—140 R 3 Claims

1. In a nozzle plate for a mosaic printing unit, said printing unit having a plurality of outlet openings arranged in the mosaic pattern, an ink channel for each outlet opening extending

away from the outlet opening in a straight line, said nozzle plate having a thickness of approximately 100μ and having a plurality of nozzle openings aligned with the outlet openings of the mosaic printer the improvement comprising each of the nozzle openings of the nozzle plate being provided with an ink inlet zone facing the outlet openings of the mosaic printer for



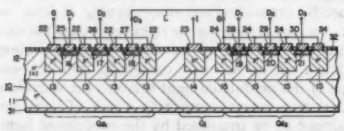
centering the recording fluid of the respective ink channel with the nozzle opening and an acceleration zone of a reduced cross-section concentrically arranged to the ink inlet zone so that ink droplets, which are expelled from the nozzle openings of the nozzle plate, are aligned according to the desired direction of flight.

4,209,795

JSIT-TYPE FIELD EFFECT TRANSISTOR WITH DEEP LEVEL CHANNEL DOPING

Terumoto Nonaka, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 22, 1977, Ser. No. 854,040
Claims priority, application Japan, Dec. 6, 1976, 51-146251
Int. Cl.² H01L *29/80*
U.S. Cl. 357—22 **17 Claims**



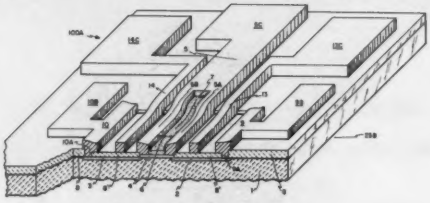
1. In a semiconductor device of the type which comprises:
a source semiconductor region having a first conductivity type;
a drain semiconductor region having said first conductivity type;
a channel semiconductor region having said first conductivity type for providing a current path between said source and said drain; and
a gate semiconductor region having a second conductivity type opposite to said first conductivity type and adjoining said channel to form a p-n junction with said channel;
said channel being substantially pinched-off by a depletion layer developed around said p-n junction without application of an external biasing potential to said gate;
said channel being rendered conductive by application of an external biasing potential to said gate to forward-bias said p-n junction, causing said depletion layer to shrink, the improvement comprising:
recombination centers for minority carriers in said channel, formed in at least said channel, thereby reducing storage effect due to those minority carriers which are injected into said channel from said gate in the conductive state of said channel.

4,209,796

CHARGE-FLOW TRANSISTORS HAVING METALLIZATION PATTERNS

Stephen D. Senturia, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 21, 1977, Ser. No. 853,059
Int. Cl.² H01L *29/76*
U.S. Cl. 357—23 **45 Claims**



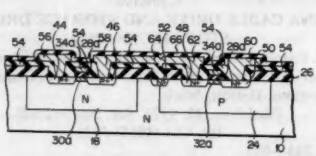
1. A charge-flow transistor comprising: a semiconductor substrate; a source region; a drain region; a gate insulator; a gapped gate electrode comprising a pair of fingers with a gap between the fingers; a material having some electrical conductance disposed in said gap; contacting means comprising a plurality of contacts for making electrical contact to the source region and the drain region; insulating means to insulate said contacts from the substrate, from each other and from the gate electrode and the gate electrode from the substrate, said insulating means being imperfect and thus permitting parasitic currents to flow in directions substantially parallel to the plane of said substrate between said contacts and between said contacts and the gate electrode; and passive metallization means positioned on said transistor to intercept and conduct away said parasitic currents.

4,209,797

COMPLEMENTARY SEMICONDUCTOR DEVICE

Hideharu Egawa, Tokyo; Koji Matsuki, Yokohama, and Yasoji Suzuki, Ayase, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 5, 1978, Ser. No. 922,192
Claims priority, application Japan, Jul. 4, 1977, 52-79045
Int. Cl.² H01L *27/02, 27/12, 29/04*
U.S. Cl. 357—42 **11 Claims**



1. A complementary semiconductor device comprising a semiconductor substrate of one conductivity type having a low impurity concentration; P -and N-type semiconductor regions formed in said substrate and having substantially the same impurity concentration; an N-channel type silicon gate field effect transistor including source and drain regions formed in said P-type semiconductor region and a gate region including a gate electrode comprising a polycrystalline silicon layer of one conductivity type; a P-channel type silicon gate field effect transistor including source and drain regions formed in said N-type semiconductor region and a gate region including a gate electrode comprising a polycrystalline silicon layer, said polycrystalline silicon layer being of the same conductivity type as that of said polycrystalline silicon layer of said N-channel transistor; a first impurity layer formed in that portion of the P-type semiconductor region which corresponds to said gate region and determining the threshold voltage of said

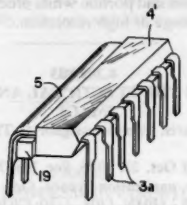
N-channel transistor; and a second impurity layer formed in that portion of the N-type semiconductor region which corresponds to said gate region and determining the threshold voltage of said P-channel transistor, said second impurity layer being formed by doping the same conductivity type impurity as that of said first impurity layer.

4,209,798

MODULE FOR INTEGRATED CIRCUITS

Giacomo Beretta, Milan, Italy, assignor to Sgs-Ates Componenti Elettronici S.p.A., Milan, Italy

Continuation of Ser. No. 843,943, Oct. 20, 1977, abandoned.
This application Mar. 21, 1979, Ser. No. 22,476
Claims priority, application Italy, Oct. 21, 1976, 22348 B/76
Int. Cl.[2] H01L *23/48, 29/44, 23/28*
U.S. Cl. 357—70 **8 Claims**



1. In an integrated circuit, in combination:

a metal foil having a solid portion of generally rectangular configuration with a limited seat-forming area along one major edge of the rectangle and a plurality of transverse tongues integrally projecting from the opposite major edge thereof;

a semiconductive chip bearing integrated circuitry and resting on said seat-forming area;

an array of mutually disconnected conductor strips connected to respective terminals of said chip and disposed opposite said tongues substantially parallel to the latter;

an elongate body of synthetic resin encasing said chip, part of said conductor strips and part of said metal foil while leaving free ends of said tongues and of said conductor strips projecting from opposite longitudinal edges of said body; and

a heat-dissipating metallic member extending over substantially the entire length of said body while being closely juxtaposed and in contact substantially throughout said length with an exposed part of said metal foil, including said tongues, adjacent one of said opposite longitudinal edges.

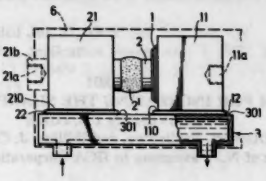
4,209,799

SEMICONDUCTOR MOUNTING PRODUCING EFFICIENT HEAT DISSIPATION

Winfried Schierz, Roth, and Claus Butenschön, Nüremberg, both of Fed. Rep. of Germany, assignors to Semikron Gesellschaft für Gleichrichterbau und Elektronik m.b.H., Nüremberg, Fed. Rep. of Germany

Filed Aug. 24, 1977, Ser. No. 827,341
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638909
Int. Cl.[2] H01L *23/02, 25/04*
U.S. Cl. 357—81 **27 Claims**

1. In combination with a semiconductor device having two load current conducting contacts each at a respective contacting side of the device and a single cooling element for dissipating heat generated in the device, the improvement comprising: two metallic contacting elements each contacting one of said respective sides of said device and conductively connected to said contact at that side for conducting the load current of said device, and means firmly connecting each of said contacting elements to said cooling element in a thermally conducting electrically insulating manner, said contacting elements being constructed, and being connected to said sides of said device and to said cooling element, for optimally cooling said device



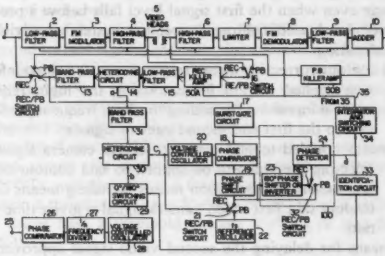
at each contacting side thereof by optimally dissipating heat from each said contacting side to said cooling element, without themselves acting as cooling elements, while simultaneously conducting the load current of said device.

4,209,800

MAGNETIC COLOR VIDEO RECORDING AND REPRODUCING SYSTEM WITH COLOR KILLER CIRCUIT

Chojuro Yamamitsu, Kawanishi; Sadafumi Kitamura, Neyagawa, and Akira Miyamoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1978, Ser. No. 921,718
Claims priority, application Japan, Jul. 7, 1977, 52-81846
Int. Cl.[2] H04N *5/795*
U.S. Cl. 358—8 **11 Claims**



1. A magnetic video recording and reproducing system in which a carrier chrominance signal is frequency-converted by a signal associated with an output signal of a variable frequency oscillator, comprising:

first phase comparator means for phase-comparing, in recording mode, a burst signal in an input video signal with the output signal of said variable frequency oscillator,

means for controlling said variable frequency oscillator in response to an error signal produced by said first phase comparator means,

second phase comparator means for phase-comparing, in playback mode, a burst signal in a reproduced carrier chrominance signal with an output signal of a fixed frequency oscillator,

means for controlling said variable frequency oscillator in response to an error signal produced by said second phase comparator means,

phase detector means having first and second inputs for comparing the phase of two signals, said inputs having a relative phase difference different from the phase difference between signals applied to said first and second phase comparator means,

switching means for applying to said phase detector means the burst signal in the input video signal and the output signal of said variable frequency oscillator in the record-

ing mode and the burst signal in the reproduced carrier chrominance signal and the output signal of said fixed frequency oscillator in the playback mode, and

means for producing a color killer signal from the output of said phase detector means.

4,209,801

SYSTEM FOR INCREASING THE SHARPNESS IN A TELEVISION PICTURE

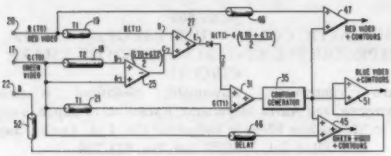
Robert A. Dischert, Burlington, and William J. Cosgrove, Marlton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,822

Claims priority, application United Kingdom, May 30, 1977, 22803/77

Int. Cl.[2] H04N *9/535, 9/539*

U.S. Cl. 358—37 **10 Claims**



1. A contour correction system for use in a color television system having means for furnishing at least first and second camera signals for increasing the sharpness of the reproduced image even when the first signal level falls below a predetermined level, said contour correction system comprising in combination:

a contour correction means responsive to the video information applied thereto for extracting the high frequency video information for adding this high frequency information to the first and second camera signals;

means coupled to said first and second camera signals for selecting the video to be applied to said contour correction means, said selection means including means for extending said first video camera signal a given time duration;

means for delaying the second video signal approximately one half said given time duration; and

means responsive to said delayed second video signal level exceeding the extended first video signal level by a predetermined amount for providing a portion of the second video signal to said contour correction means.

4,209,802

GLASS FRAGMENT DETECTOR

Daniel A. Fogg, Bradenton, Fla.; Maurice W. Brandt, and Marshall Kiemundt, both of Freemont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Sep. 25, 1978, Ser. No. 939,530

Int. Cl.[2] H04N *7/18*

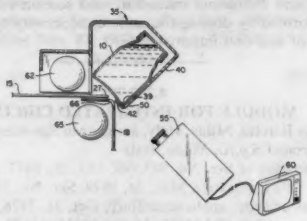
U.S. Cl. 358—106 **10 Claims**

1. Apparatus for aiding an operator in the visual inspection of jars filled with translucent material comprising:

means for tilting the jars by an angle less than 90°, thereby defining a lowermost portion of the jar bottom, such that solid material within the jar gravitates to and is localized at the lowermost portion;

means for transporting the jars in their tilted position along a predetermined path past an inspection station;

means for forming a magnified visual image, such means situated sufficiently close to lowermost portion to precisely focus on said portion while producing a clear, sharp magnified image of high resolution.



4,209,803

DEVICE FOR THE ELECTRICAL ANALYSIS OF AN IMAGE

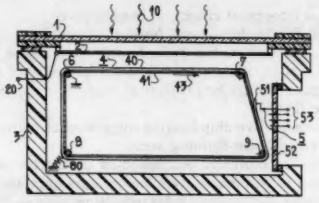
Lucien Guyot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 22, 1976, Ser. No. 735,045

Claims priority, application France, Oct. 28, 1975, 75 32928

Int. Cl.[2] H04N *1/04, 1/30;* **G03G** *15/00*

U.S. Cl. 358—110 **6 Claims**



1. A device for the electrical analysis of an image furnished in the form of an incident stream, comprising: a single mobile carrier; first means for producing a non-uniform spatial distribution being a function at any point, of the intensity of said image; second means for capacitively providing an electrical reading-out of said charge distribution, furnishing an electrical video signal representing a line-by-line analysis of said image, said lines being substantially perpendicular to the direction of displacement of the carrier; said first means; said device further comprising a third means for applying a potential difference across said gas, said carrier being an insulator and being arranged in the gas so that said charge distribution is constituted by the electrical charges which have been liberated by the ionisation of said gas.

4,209,804

RECORD CARRIER CONTAINING INFORMATION IN AN OPTICALLY READABLE RADIATION REFLECTING INFORMATION STRUCTURE

Jan G. Dil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,133

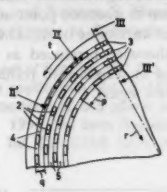
Claims priority, application Netherlands, Oct. 19, 1978, 7810462

Int. Cl.[2] H04N *5/76;* **G06K** *19/06*

U.S. Cl. 358—128.5 **8 Claims**

1. A record carrier containing information in an optically readable radiation reflecting information structure comprising information areas, which are arranged in information tracks, which are spaced from each other in the track direction by intermediate areas, and which have a phase depth which is substantially constant over the entire record carrier, character-

ized in that the cross-section, transverse to the track direction, of the information areas is substantially V-shaped, that the phase depth of the information areas has one value between



100° and 125°, and that the angle of inclination between the walls of the information areas and the normal to the record carrier is substantially constant and has a value between 65° and 85°.

4,209,805

VIDEO SIGNAL PROCESSING CIRCUIT INCLUDING LOCK-OUT PREVENTION MEANS FOR THE INTERMEDIATE FREQUENCY AMPLIFIER THEREOF

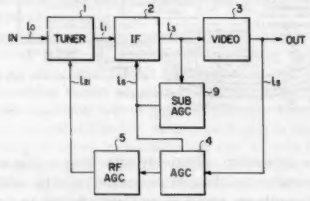
Tsuneo Ikeda, 4-595-24 Tomoda-cho, Ohme-shi, Toyko, and Kenichi Tonemura, 1-3-17 Wakaba-cho, Tachikawa-shi, Tokyo, both of Japan

Filed Jun. 29, 1978, Ser. No. 920,249

Claims priority, application Japan, Aug. 10, 1977, 52-95082

Int. Cl.[2] H04N *5/52;* **H03G** *3/30;* **H04B** *1/16;* **H04N** *5/14*

U.S. Cl. 358—175 **9 Claims**



1. A video signal processing circuit comprising:

an intermediate frequency amplifier circuit, for amplifying an input intermediate frequency signal, incorporating a signal amplifying transistor;

a synchronous detection circuit for reproducing a video carrier signal in accordance with the signal output from said intermediate frequency amplifier circuit, and for producing a detection signal by making use of the reproduced carrier signal;

a first automatic gain control circuit for delivering a first gain control signal to said intermediate frequency amplifier, in accordance with the level of the detection signal upon receipt of the detection signal from said synchronous detection circuit; and

a second automatic gain control circuit for delivering a second gain control signal to said intermediate frequency amplifier, in accordance with the level of the output from said intermediate frequency amplifier circuit, wherein said second gain control signal lowers the gain of said intermediate frequency amplifier circuit only when the level of the output from said intermediate frequency amplifier circuit becomes excessively high so as to force said signal amplifying transistor to function at its saturation region.

4,209,806

SOLID-STATE IMAGING DEVICE

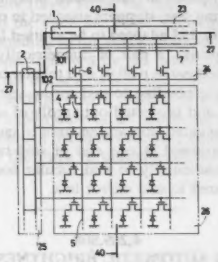
Norio Koike, Tokyo; Iwao Takemoto, Kodaira; Toshiyuki Akiyama, Kokubunji; Haruhisa Ando, Kokubunji; Shinya Ohba, Kokubunji; Masatada Horiuchi, Koganei, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 27, 1978, Ser. No. 928,734

Claims priority, application Japan, Aug. 1, 1977, 52/91362

Int. Cl.[2] H04N *3/14;* **H01L** *29/78, 27/14*

U.S. Cl. 358—213 **20 Claims**



1. A solid-state imaging device comprising

a semiconductor body of a first conductivity type having first, second, third and fourth surface regions,

a plurality of photoelectric elements disposed in a first surface region, arranged in a two dimensional array,

a plurality of vertical switching MOSTs disposed in a first surface region, and being for addressing a vertical direction of said array,

a plurality of horizontal switching MOSTs disposed in a second surface region, and being for addressing a horizontal direction of said array,

a plurality of first MOSTs constituting a vertical scanning circuit for addressing said vertical switching MOSTs, and disposed in a third surface region, and

a plurality of second MOSTs constituting a horizontal scanning circuit for addressing said horizontal switching MOSTs, and disposed in a fourth surface region, and

wherein a threshold voltage $V_T{}^{H}{}_{(SC)}$ of said second MOST is lower than a threshold voltage $V_T{}^{V}{}_{(SC)}$ of said first MOST.

4,209,807

PROJECTION TYPE TELEVISION SET

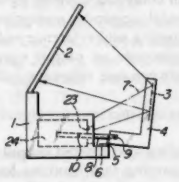
Hachiro Arita, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 4, 1978, Ser. No. 965,890

Claims priority, application Japan, Dec. 14, 1977, 52/168616[U]

Int. Cl.[2] H04N *5/74*

U.S. Cl. 358—237 **2 Claims**



1. A projection type television set having a main body, a projecting tube accommodated by said main body, a screen

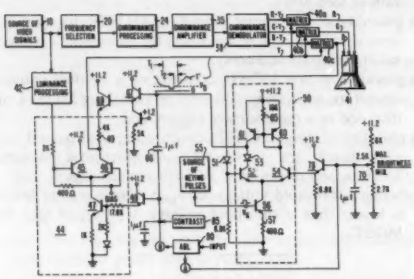
attached to said main body and a mirror box including a mirror, said mirror box being pivotally mounted on said main body for a rotation around an axis between a closed position and an opened position, said mirror being adapted, when said mirror box is in the opened position, to reflect the light coming from said projecting tube and project the light onto said screen, so as to display an image on said screen, characterized by comprising at least one control rod for controlling said rotation of said mirror box between said closed position and said opened position, said control rod including a tubular body, a spring seat movably received by said tubular body, a pair of coiled spring disposed in said tubular body and at respective sides of said spring seat, stoppers attached to respective ends of said tubular body and adapted to be abutted by the outer ends of respective springs, a pair of diametrically opposing elongated slots formed in the wall of said tubular body, at a portion of the latter corresponding to said spring seat, a shaft fixed to said spring seat and projected outwardly of said tubular body through said elongated slots and secured to said main body and another shaft disposed at one end of said tubular body and extending perpendicularly to said tubular body, said another shaft being secured to said mirror box.

4,209,808

STABILIZED AUTOMATIC BRIGHTNESS CONTROL NETWORK IN A VIDEO SIGNAL PROCESSING SYSTEM INCLUDING AN AUTOMATIC KINESCOPE BEAM CURRENT LIMITER

Leopold A. Harwood, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,964
Int. Cl.[2] H04N *5/68*
U.S. Cl. 358—243 **6 Claims**



1. In a video signal processing system including a video signal channel for processing an image representative video signal having periodically recurring image intervals, and blanking intervals disposed between adjacent image intervals and containing a blanking level determinative of image brightness; a source of brightness reference voltage; a kinescope for reproducing images in response to video signals applied thereto; and a gain controllable video signal amplifier included in said video channel; apparatus comprising:

means for comparing said reference voltage and said blanking level to provide an output signal indicative of the difference between said reference voltage and said blanking level;

means for filtering said output signal of said comparing means;

means for coupling said filtered output signal to said video channel for varying said blanking level in a direction to reduce the magnitude of said difference;

control means for deriving an output control signal representative of excessive current demand of said kinescope;

first means for coupling said derived control signal to a first point in said amplifier for varying the gain thereof and thereby the peak amplitude of said video signal in a direction to limit said kinescope current demand; and

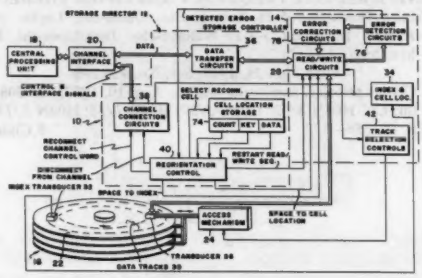
second means for coupling transient variations of said derived control signal to a second point in said amplifier for opposing transient variations of the D.C. output level of said amplifier otherwise produced as the gain of said amplifier is varied in response to transient variations of said derived control signal.

4,209,809

APPARATUS AND METHOD FOR RECORD REORIENTATION FOLLOWING ERROR DETECTION IN A DATA STORAGE SUBSYSTEM

Henry K. Chang, and Wolfgang H. Hausen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1978, Ser. No. 940,949
Int. Cl.[2] G11B *5/09*
U.S. Cl. 360—53 **9 Claims**



1. In a subsystem selectively attaching a channel interface and responsive to channel command words, said subsystem storing records on media in moving relation to a plurality of transducers, the records being written on cyclically readable paths, each path being subdivided into equal fixed length recording cells which are sequentially numbered past an index point on said path, the beginning of each field of each record coinciding with an initial cell for the field, the method of reorienting a selected transducer to the field of the record where a retriable error has occurred comprising the steps of:

ascertaining the initial cell number of each field while processing;

detecting retriable errors;

disconnecting the subsystem from the channel upon detection of a retriable error;

selecting a reorientation cell number from the initial cell number for the field in which the retriable error was detected as a function of the type of field, error and an original channel command word being executed;

moving the path relative to the selected transducer through the index point and until the transducer is positioned a predetermined distance before the reorientation cell;

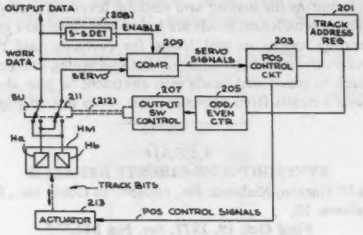
reconnecting the subsystem to the channel and requesting repeat of the original channel command word; and

moving the path relative to the selected transducer to the reorientation cell upon the condition that the original channel command word is repeated.

4,209,810
DI-GAP, VARIABLE-FREQUENCY RECORDING TECHNIQUE AND ASSOCIATED SYSTEM

Herbert U. Ragle, and Norman S. Blessum, both of Thousand Oaks,, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 807,155, Jun. 16, 1977, Pat. No. 4,166,282. This application Oct. 2, 1978, Ser. No. 947,557
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.[2] G11B *5/56, 21/10*
U.S. Cl. 360—77 **20 Claims**



1. An improved magnetic recording subsystem including an improved magnetic head arrangement adapted to record and to detect first and second associated recording bits along prescribed track portions of a magnetic record medium, all these bits being skewed relative to elongate axis of the track and disposed orthogonal to one another, and at least some of these bits being recorded at a first frequency along certain tracks and at a second frequency along adjacent tracks, this subsystem being arranged to apply the output detected from said first bits to a first data utilization means and to apply the output detected from said second bits to a second data utilization means, said subsystem comprising:

di-gap magnetic transducer means including at least one pair of skewed relatively transverse transducer gaps each having an associated output connection;

output switching means adapted to shift the respective outputs from each said pair of gaps periodically between said first and second utilization means, each gap in such a pair thus being devoted to transducing one of said bit types along a given track, with the other gap devoted to transducing to the other bit type, these respective bits and gaps thus being aligned parallel along any given track, the bit types being thus selectively interchangeable as to associated utilization means from track to track as desired and encoded, this relationship being followed by such switching means; and

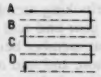
first and second filter means operatively associated with said first and second utilization means respectively and adapted to pass only said first and only said second recording frequencies, respectively.

4,209,811
DEVICE FOR AUTOMATICALLY RECORDING, REPRODUCING AND TRANSLATING, AND CORRESPONDING CIRCUIT

Milos Blazevic, 62 rue Georges Ferrand, 94380 Bonneuil-sur-Marne, France

Continuation-in-part of Ser. No. 768,563, Feb. 14, 1977, Pat. No. 4,138,696. This application Sep. 19, 1978, Ser. No. 943,853
Int. Cl.[2] G11B *21/08, 25/04*
U.S. Cl. 360—78 **5 Claims**

1. In an automatic device for recording, reproducing and translating, said device being of the type using magnetic rectangular cards having visible horizontal lines of writing on their front surfaces which are readable from left to right, and a magnetic coating on their rear surfaces to support magnetic tracks traversed alternately from left to right and from right to left by a movable magnetic head, a skipping mechanism for producing relative displacement between said cards and device to permit passage from one line to the next, and in which each line of writing on the front surface corresponds to two tracks on the rear surface of each card, namely an upper track and a lower track, each upper track of a line is traversed by said head in a direction opposite to that of the upper track of the preceding line and each lower track is traversed in a direction opposite to the direction of travel over the upper track of the corresponding line, said device being arranged to permit the choice between four different patterns of travel the first corresponding to the alternate travel along the upper tracks, the second corresponding to the alternate travel along the lower tracks, the third corresponding to the alternate travel along the upper track of a first line, followed by the lower track of the same line, the lower track of the next line, and finally the upper track of the next line, and the fourth method of exploration corresponding to the exploration of an upper track of a first line, then the lower track of the same line, then an inactive return to the other end of the track to subsequently traverse the upper



track of the following line and the lower track of the same following line, and so on, the improvement comprising a double magnetic head having an upper head and a lower head which correspond respectively to said upper tracks and said lower tracks, the skipping mechanism having a pitch corresponding to that between lines of writing, and being electrically controlled, and an automatic control circuit comprising means for carrying out the first pattern of travel by switching on the upper magnetic head and and controlling the mechanical skipping at each end of the path of travel by sensors at the end of said path of travel, means for carrying out the second pattern of travel in the same manner but with the lower head, means for carrying out the third pattern of travel utilizing the mechanical skip at each left end of each track and switching between heads at each right end of each track, and means for carrying out the fourth pattern of travel by successively, for each sequence of three track ends, only switching heads at the first end of the track, mechanically skipping and switching with stopping of its sound at the second track end, and re-establishing sound without switching or skipping at the third track end.

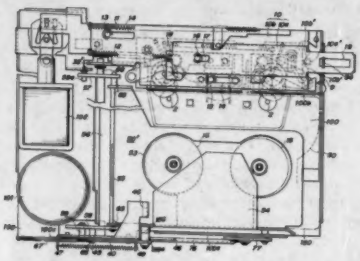
4,209,812
TAPE PLAYER

Hiroyuki Umezawa, and Hitoshi Okada, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1978, Ser. No. 930,421
Claims priority, application Japan, Aug. 9, 1977, 52-105790[U]; Aug. 10, 1977, 52-95187; Aug. 10, 1977, 52-95813
Int. Cl.[2] G11B *15/26, 15/44, 23/04*
U.S. Cl. 360—96.3 **7 Claims**

1. A tape player comprising a motor, first and second endless belts, capstans, flywheels adapted to be rotated conjunctly with the capstans, two reels on which a tape cassette is to be loaded for record or playback, and two drive members adapted to be selectively coupled with a shaft of one or the other of said reels to take up a tape in said cassette, said first and second endless belts having portions coupled to the shaft of said mo-

tor, said first endless belt having portions engaging said drive members, said second endless belt having a portion engaging said flywheels, a forward/reverse feed gear coupled with one of said drive members, a fast feed and rewind gear coupled with the other drive member, a selector member, a slidable member adapted to slide in response to the operation of the selector member, an interlocking gear mechanism provided on



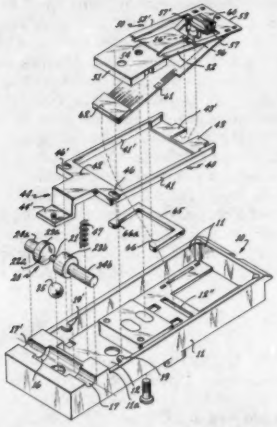
said gear member, reel bases, reel actuators provided to the reel bases, and an interlocking member provided between said forward/reverse feed gear and said rewind gear and between said reel bases, said gear member being adapted to be switched by said operating portion, and said interlocking member being adapted to carry out the switching of the relation between said gears and said reel actuators.

4,209,813

DUAL MAGNETIC HEAD MOUNTING AND LOADING

Philip S. Bryer, Woodland Hills, Calif., assignor to PerSci, Inc., Los Angeles, Calif.

Filed Jan. 18, 1979, Ser. No. 4,293
Int. Cl.[2] G11B 5/48, 5/54
U.S. Cl. 360—105 **6 Claims**



1. A dual head mounting structure for cooperation with a flexible media, comprising:

a frame defining a gap in-between for insertion of said media, the frame having first and second mounting space in its interior, adjacent said gap;

a rocking lever in each said mounting space, there being two rocking levers accordingly, each being separately pivoted on parallel axes in said frame, so that a forward arm of each lever can pivot towards and away from said gap;

a first and a second spring, each having three parallelly extending leaf spring arms joined at one end for common mounting of each spring to said frame, respectively, in said first and second mounting space, two outer ones of the three arms being joined by a platform, there being two platforms accordingly, a middle arm of each spring having means for engaging said platform from opposite sides, but only one side at a time;

a pair of heads respectively mounted on said platforms, facing each other across said gap;

said foward arms of said levers, respectively, provided to engage said center arms of said springs for pivoting and flexing the center arm away from said gap when said lever arms are pivoted away from said gap;

spring means for biasing said rocking levers to a pivot position in which said heads are held away from said gap; and

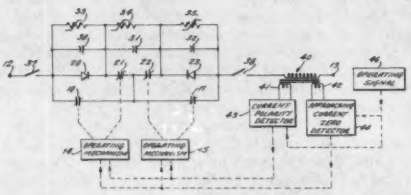
operating means in said frame for pivoting said rocking levers towards each other so that said spring arms can flex back to place said heads into abutment or into abutment with a media from opposite sides when in said gap.

4,209,814

SYNCHRONOUS CIRCUIT BREAKER

Ruben D. Garzon, Malvern, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 19, 1977, Ser. No. 843,575
Int. Cl.[2] H02H 7/22
U.S. Cl. 361—5 **1 Claim**



1. A minimum arcing a-c circuit interrupter comprising, in combination:

first and second high speed switches connected in series with one another;

a first diode and a first isolator switch connected in series with one another and in parallel with said first high speed switch;

a second diode and a second isolator switch connected in series with one another and in parallel with said second high speed switch;

said first and second diodes being connected in series, and with opposing polarities;

first operating means for said first and second high speed switches, respectively; said first operating means being operable to operate their respective switch to an open position at some first given time prior to a current zero;

second operating means for said first and second isolator switches for operating said isolator switches to an open position at some second given time after the commutation of current from one of said first or second high speed switches and into a respective one of said first or second diodes;

polarity monitoring means connected to said first and second operating means for operating only that one of said first or second high speed switches which carries current in the same direction as the forward conducting direction of its respective diode;

said first given time being about 100 microseconds prior to current zero;

said second given time being about current zero time;

disconnect switch means in series with said first and second high speed switches, said disconnect switch means opening after said interrupter has operated;

first and second voltage division capacitance means connected in parallel with each of said first and second diodes,

respectively, and a third voltage division capacitance means connected in parallel with said first and second isolator switches and in series with said first and second voltage division capacitance means;

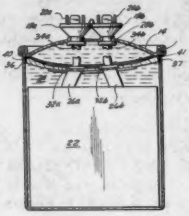
and first, second and third non-linear resistor means connected in parallel with said first, second and third voltage division capacitance means, respectively, and in series of each other.

4,209,815

CAPACITOR PROTECTIVE CIRCUIT

Richard L. Rollins, Williamstown, Mass., and Thomas T. Paquin, North Bennington, Vt., assignors to Jard, Inc., Bennington, Vt.

Filed Apr. 17, 1978, Ser. No. 896,719
Int. Cl.[2] H02H 7/16
U.S. Cl. 361—15 **6 Claims**



1. In a liquid dielectric capacitor of the type comprising: a sealed casing having a noncircular cross-section with at least one major axis, a top cover for said casing, at least one terminal extending through said top cover, liquid dielectic capacitance means sealed within said casing, and a breakable electrical conductor within said casing extending between said capacitance means and said terminal, the improvement comprising: an elongated flexible plate member positioned within said casing between said capacitance means and said terminal, said plate member having opposed ends substantially abutting the interior of said casing along said major axis, said conductor being fixed to said plate member and being adapted to break when the relative distance between said terminal and plate exceeds a preselected value, said plate member being preconditioned to bow downwardly in response to inwardly directed forces on said plate member opposite ends and said casing interior surfaces along said major axis being adapted to move inwardly to apply inwardly directed forces on said plate member opposite ends in response to a build up of pressure within said casing.

4,209,816

PROTECTIVE CONTROL FOR VEHICLE STARTER AND ELECTRICAL SYSTEMS

James E. Hansen, Oak Creek, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 7, 1978, Ser. No. 922,725
Int. Cl.[2] H02H 7/18, 3/14
U.S. Cl. 361—23 **15 Claims**

1. A protective control for the starter system of an engine which is cranked by a starter motor, comprising:

starter relay means in circuit with said starter motor;

frequency selective means responsive to engine RPM to automatically open said starter relay means above a predetermined threshold set frequency corresponding to a designated RPM level, to prevent cranking of said engine thereabove,

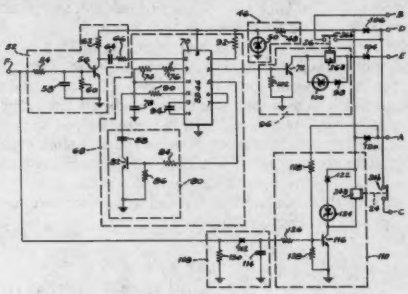
said frequency selective means including hysteresis means to prevent reclosing of said starter relay means until engine RPM drops to a lower level corresponding to a reset frequency less than said threshold set frequency, whereby to prevent recranking of said engine until engine RPM drops to said lower level;

transducer means responsive to engine speed to produce a signal whose frequency corresponds to engine RPM,

said frequency selective means having an input for receiving said transducer signal and an output controlling said starter relay means;

wherein said transducer signal, upon reaching said threshold set frequency, causes said output to switch states and also activates said hysteresis means to lower the frequency value necessary to cause switching of said output back to its original state;

said transducer means comprising an AC signal generator and input waveshaping means for receiving the AC signal and delivering a clear waveshape signal to said input of said frequency selective means;



said frequency selective means comprising a programmable frequency switch having an input receiving said transducer signal and a pair of opposite state outputs one of which is connected to said starter relay means and the other of which is connected to a hysteresis network, such that when the frequency of said transducer signal at said input reaches said threshold value, said outputs switch states such that said one output causes opening of said starter relay means and said other output causes said hysteresis network to lower the value of said threshold frequency down to said reset frequency;

said hysteresis network comprising a capacitor which is floated when the other of said outputs is in the first mentioned of its states, and which is connected in circuit with said frequency switch when said other of said outputs switches to its second mentioned state.

4,209,817

CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

James P. McGinnis, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed Mar. 15, 1978, Ser. No. 886,691
Int. Cl.[2] H02H 3/08
U.S. Cl. 361—94 **5 Claims**

1. A circuit protection device to detect fault conditions in an electrical power circuit having a plurality of conductors and protect said power circuit against such fault conditions, including:

separable contact means for each conductor,

circuit interruption means movable from a set position to a trip position to separate said contact means on occurrence of a fault condition,

manually operable means for moving said interruption means to said set position and from said set position,

current responsive transformer means for each conductor developing an output proportional to the current in the respective conductor,

latch means movable between a latch position holding said

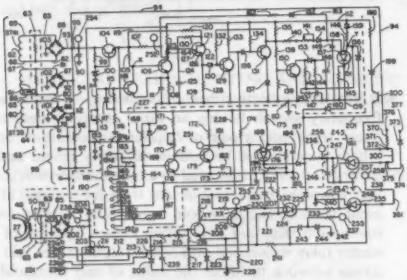
interruption means in said set position and an unlatch position enabling said interruption means to move to said trip position,

a coil having an armature movable to one position for enabling said latch means to move to said latch position and movable to another position for moving said latch means to said unlatch position,

said circuit interruption means engaging said latch means in said latch position to retain said circuit interruption means in a set position, said latch means moved to said unlatch position in response to energization of said coil to move said circuit interruption means from said set position to said trip position to separate said separable contact means for each conductor and interrupt said power circuit,

means operated in response to movement of said circuit interruption means to said trip position for moving said armature to said one position for enabling said latch means to move to said latch position,

solid state interruption initiating means controlled by the output of each transformer means in response to the passage of a selected one of a plurality of predetermined currents in any of said conductors to detect fault conditions in said power circuit and energize said coil to move said armature to said other position and said latch means to said unlatch position whereby said circuit interruption means moves from said set position to said trip position to separate the contact means for each conductor and interrupt said power circuit,



ampere rating means to control the output level of said transformer means to control said solid state initiating means in accordance with the current in said power circuit, said ampere rating means including a receiving member and an ampere rating connector element optionally inserted in said receiving member and connectible to said transformer means and optionally disconnectible from said transformer means,

a common base carrying said conductors, circuit interruption means, transformer means coil and said latch means independently of said solid state means,

a first unitary cover engaged with said base in overlapping relationship to said transformer means, interruption means, coil and latch means with said first cover carrying said solid state means, said receiving member and said manually operable means,

said ampere rating means inserted in said receiving member with said first cover means engaged with said base,

a second separate cover means moved independently of said first cover to engage said first cover and overlap said connector element and said receiving member when said first cover is engaged with said base,

unlatching means engaged by said second cover means in response to the engagement of said second cover means with said first cover to move said latch means to said latch position,

and biasing means biasing said unlatching means to move said latch means to the unlatch position and move said circuit interruption means to said trip position when said second cover means is disengaged from said first cover,

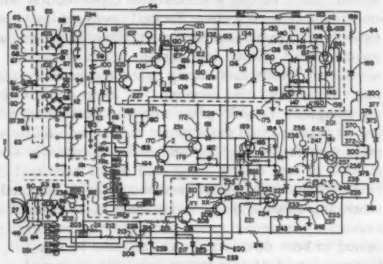
said unlatching means including a lever assembly overlapped by said first cover and carried by said base independently of said solid state means and having a first leg portion moved by said second cover means in response to the engagement of said second cover means with said first cover, and a second leg portion disengaged from said latch means in response to movement of said first leg portion by said second cover means to enable said latch means to move to said latch position and moved by said biasing means to engage said latch means for moving said latch means to the unlatch position in response to the disengagement of said second cover means from said first cover means, and a projecting member including a shaft portion extending through said first cover and having a first end portion positioned for engagement with said first leg portion of said lever assembly, and a second end portion projecting from said first cover for engagement with said second cover means in response to the engagement of said second cover means with said first cover to disengage said second leg portion from said latch means.

4,209,818

CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

Henry J. Zylstra, Alburnette, and Ronald D. Borrett, Cedar Rapids, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 15, 1978, Ser. No. 886,712
Int. Cl.[2] H02H *3/08*
U.S. Cl. 361—96 **26 Claims**



1. A circuit protective device to detect fault conditions in an electrical power circuit having a plurality of conductors and protect said power circuit against such fault conditions, including:

separate contact means for each conductor,

circuit interruption means effective to separate said contact means in response to operation of said interruption means to interrupt said power circuit on occurrence of a fault condition,

transformer means for each conductor including a current transformer for each conductor supplying a respective step up transformer for each conductor with each step up transformer having a secondary connected to a respective first d.c. bridge to provide a first d.c. output proportional to the current in the respective conductor,

solid state interruption initiating means having a reference signal means, a long time delay circuit with a respective output circuit, a short time delay circuit with a respective output circuit, and an instantaneous circuit,

a common coil adapted to be energized by said instantaneous circuit and by any of said output circuits for operating said interruption means to separate said contacts in response to a respective fault current in any one of said conductors,

a base carrying said interruption means, coil and transformer means,

a cover engaged in overlapping relationship with said base and carrying said solid state means and bridges,

means interconnecting said coil with said bridges and with said solid state means and each step up transformer secondary with a respective bridge in response to the engagement of said cover with said base,

said long time delay circuit having a respective long time delay pick-up circuit connected in common directly to each d.c. bridge for receiving the d.c. output of each first d.c. bridge,

a plurality of serially connected resistors connecting said instantaneous circuit in common to the output of each first bridge,

said short time delay circuit having a respective short time delay pick up circuit,

a second plurality of resistors serially connected between said first plurality of resistors and the short time delay pick up circuit, a capacitor connected directly to each d.c. bridge for receiving the d.c. output of said transformer means,

a receiving member carried by said cover having a respective first terminals connected to respective step up transformer secondaries and to respective bridges and having respective other terminals connected to a respective pick up circuit and to a respective output circuit, and

a rating plug engaged with said receiving member and carrying a plurality of rating resistors individually connected between a respective pair of first terminals and across respective transformer secondaries in response to the engagement of said rating plug with said receiving member,

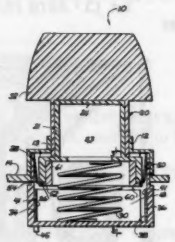
said receiving member configured to alternatively engage either said plug to connect each rating resistor respectively across a respective step up transformer secondary or to engage a terminal insert of a test device for connecting said test device to each first terminal and each other terminal whereby test potentials are applied and received from the respective other terminals.

4,209,819

CAPACITIVE KEYSWITCH

Ewald E. Seignemartin, Spokane, Wash., assignor to Key Tronic Corporation, Spokane, Wash.

Filed Mar. 13, 1978, Ser. No. 885,873
Int. Cl.[2] H01G 5/14
U.S. Cl. 361—288 **20 Claims**



1. A capacitance keyswitch having the components thereof arranged along a reference axis, comprising:

a first capacitance plate;

first support means mounting the first capacitance plate substantially parallel with the reference axis;

a second capacitance plate;

second support means mounting the second capacitance plate;

at least one of said capacitance plates comprising a resilient flexible sheet extended radially to one side of the reference axis in a cantilevered manner from a plane intersecting the reference axis across the support means on which it is mounted;

said first and second support means being movably mounted to one another for reciprocating movement relative to one another in directions parallel to said reference axis between an undepressed position and a depressed position to enable the flexible sheet to progressively bend in response to such reciprocating movement and to frictionally slide in surface-to-surface contact over the remaining capacitance plate, the resilience of said flexible sheet serving to bias it radially outward from the reference axis to provide wiping pressure against the remaining capacitance plate that deforms the flexible sheet to the remaining capacitance plate and insures intimate contact therebetween to effect changes in the capacitance between the capacitance plates in response to such reciprocating movement;

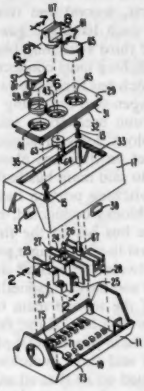
and yieldable biasing means operably mounted between said first and second support means for urging them to the undepressed position.

4,209,820

MODULAR ELECTRICAL CONTROL STATION

Morton S. Rundel, Redwood City, Calif.; Frank R. Keller, Spring House, Pa., and Peter M. Moritz, Mammoth Lake, Calif., assignors to Gould Inc., Rolling Meadow, Ill.

Division of Ser. No. 708,191, Jul. 23, 1976, Pat. No. 4,092,058.
This application Mar. 1, 1978, Ser. No. 882,371
Int. Cl.[2] H02B 1/00; H01H 9/02
U.S. Cl. 361—331 **8 Claims**



1. An electrical control station, comprising:

an enclosed housing having a top opening giving access to its interior,

a plurality of cover plates that differ by the number of holes therein, each of said cover plates sized and adapted for snap fitting into said top opening of the housing,

a plurality of components from which to select for operable attachment of one component to each hole of said cover plates, said plurality of components including a push button actuator having a portion extending below the cover plate when installed, a rotary switch actuator having a cam surface below the cover plate when installed, and a panel light lens,

a plurality of electrical contact blocks each having a push button on its top for either making or breaking electrical contacts therewithin,

a panel lamp socket block,

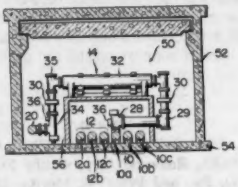
means attached to the inside of the housing on a bottom surface thereof and cooperatively shaped with the bottom of each of said blocks for selective snap engagement therebetween at positions under any of said plurality of cover plates for mechanical cooperation with an appropriate one

of said plurality of components attached to said holes of a cover plate.

4,209,821
MULTI-BREAKER TYPE GAS-INSULATED SWITCHGEAR

Nobumitsu Kobayashi, and Tatsuo Iida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 24, 1978, Ser. No. 936,388
Claims priority, application Japan, Oct. 7, 1977, 52-120777
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—341 **5 Claims**

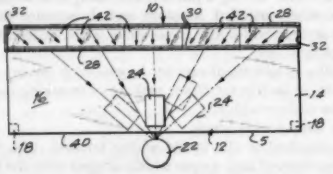


1. A multi-breaker type gas-insulated switchgear, comprising: first and second three-phase main bus bars extending horizontally in parallel with each other, each said main bus bar consisting of first, second and third single phase bus bars; switching units each having a gas-insulated circuit breaker; first, second and third switching blocks each including a plurality of said switching units connected in series by connecting bus bars and branch bus bars each extending from the connecting bus bar between two switching units connected with one another, said circuit breakers in said switching units of each said switching block being arranged substantially horizontal, flush and parallel on different planes with one another and aligned parallel to said main bus bars with each end trued up; a three-phase switching portion having the first, second and third switching blocks connected, respectively, between the first single phase bus bar of the first main bus bar and the corresponding first in-phase single phase bus bar of the second main bus bar, between the second single phase bus bar of the first main bus bar and the corresponding second in-phase single phase bus bar of the second main bus bar, and between the third single phase bus bar of the first main bus bar and the corresponding third in-phase single phase bus bar of the second main bus bar, all said three switching blocks being arranged with each end trued up so that all said breakers run flush and parallel with one another; and a housing containing said two main bus bars and said three-phase switching portion.

4,209,822
LIGHT POLARIZING ILLUMINATION DEVICE

Isaac Goodbar, Queens Village, N.Y., assignor to Edison Price Incorporated, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,190
Int. Cl.[2] F21V 9/00, 9/14
U.S. Cl. 362—19 **7 Claims**

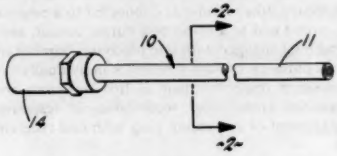


1. An illumination device comprising an elongated light source extending along a longitudinal axis, and a light polarizing filter extending below and along the length of said light source and having vertical planes of polarization, the vertical planes of polarization being at right angles to the longitudinal axis of the elongated light source along a medial portion of the filter, the vertical planes of polarization of areas of the filter successively farther removed from the medial portion and extending on each side thereof forming successively smaller angles to the longitudinal axis of the lamp, whereby the vertical planes of polarization converge to a predetermined area, the predetermined area being located longitudinally intermediate the length of said light source and transversely forward thereof.

4,209,823
PYROTECHNIC LIGHT SOURCE

Frank B. Burkdoll, Fairfield, Calif., assignor to Explosive Technology, Inc., Fairfield, Calif.

Filed Aug. 2, 1978, Ser. No. 930,181
Int. Cl.[2] F21V 9/16
U.S. Cl. 362—84 **11 Claims**

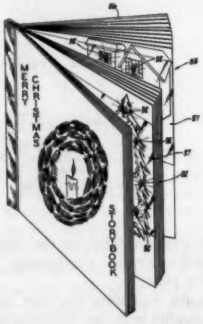


1. A pyrotechnic light source comprising: an elongated tubular casing of light transmissive material capable of withstanding an internal ignitive reaction without rupturing, a core of pyrotechnic material within the casing for burning with a rapid light producing reaction when ignited, and a phosphorescent material activated by the light produced by the ignition of the pyrotechnic material for maintaining a sustained glow which is visable externally of the casing after the burning reaction is completed.

4,209,824
ELECTRICALLY ILLUMINATED BOOK

Beverly F. Kaufman, 801 Amolac Dr., St. Louis, Mo. 63141

Filed Feb. 2, 1978, Ser. No. 874,405
Int. Cl.[2] A47B 19/00
U.S. Cl. 362—98 **8 Claims**



8. In an electrically illuminated book:
(a) a plurality of pages, each page including adjacent superimposed sheets, one sheet providing the front side of the page and another sheet providing the reverse side of the page,

(b) miniature electric lamps disposed on the sheets of the pages in preselected, misaligned positions, and

(c) an electric means carried by the book and including:

1. an electric power source,
2. an electric circuit means located between the front and reverse sheets of the pages for connecting the power source to the lamps, and
3. a digitally-actuated switch for selectively energizing the electric lamps.

4,209,825

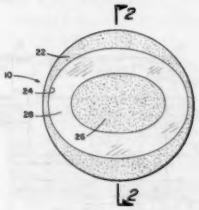
LAMP

John T. Shackelford, Tulsa, Okla., assignor to Optronics, Inc., Fort Gibson, Okla.

Filed Dec. 27, 1977, Ser. No. 864,600

Int. Cl.² F21V 7/00

U.S. Cl. 362—299 **13 Claims**



1. A modified lamp for emitting a beam of light, the lamp having a parabolic reflector, a light emitter located near the focus of the parabolic reflector, and a lense element covering the reflector and the light emitter; the modification comprising the lense element having two selected areas of opaque coating for reducing peripheral glare thereby shaping the beam pattern, the first area of opaque being around the outer periphery of the lense element, the second area of opaque coating covering the center portion of the lense element leaving a light aperture area interposed between the first and second areas of opaque coating, the first and second areas of opaque coating being shaped to cooperate with the lense element structure to reduce the outer periphery of light emitted from the lamp.

4,209,826

REGULATED SWITCHING MODE POWER SUPPLY

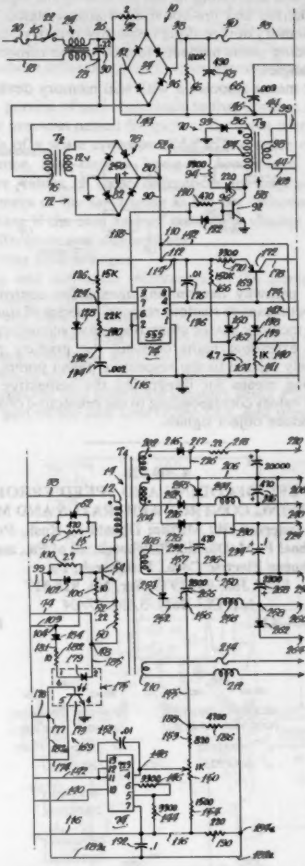
Robert A. Priegnitz, Algonquin, Ill., assignor to Coilcraft, Inc., Cary, Ill.

Filed Jun. 14, 1978, Ser. No. 915,378

Int. Cl.² H02M 3/335

U.S. Cl. 363—21 **15 Claims**

1. A regulated switching mode power supply comprising a power transformer having a primary winding, a core, and forward transfer and flyback secondary windings, a DC source in series with said primary winding, means for periodically interrupting current flow through said primary winding, said forward transfer secondary winding having a diode in series therewith to permit current flow only in that direction induced by the rise of current in said primary winding and said flyback secondary winding having a diode in series therewith to permit current flow only in that direction induced by a stopping of current in said primary winding, feedback means in circuit with said flyback winding and being operable to effect pulse width modulation of said interrupting means in order to regulate the voltage on said flyback winding and averaging filter means in circuit with said forward transfer winding, whereby



the power supply is operable to provide regulated forward transfer and flyback voltage outputs.

4,209,827

APPARATUS FOR THE ELEMENT-WISE RECONSTRUCTION OF A TOMOGRAM OF A CROSS-SECTION OF AN OBJECT

Simon Duinker, Mollaan, Netherlands, assignor to N. V. Optische Industrie "De Oude Delft", Netherlands

Filed Aug. 29, 1977, Ser. No. 828,898

Claims priority, application Netherlands, Sep. 6, 1976, 7609885

Int. Cl.² G01T 1/16

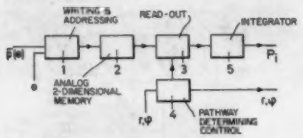
U.S. Cl. 364—414 **13 Claims**

1. An apparatus for use in reconstructing a tomogram of a cross-sectional planar slice of an object from logarithmized, parallelized and pre-convoluted analog signal profiles, each profile including a plurality of data points corresponding to absorption of object points along parallel radiation lines forming a flat beam of penetrating radiation in the plane of the slice at a respective exposure angle of rotation about an axis perpendicular to the plane of the slice, the apparatus comprising

a memory device suitable for receiving and storing analog data in a two-dimensional arrangement,

writing and addressing means for storing the logarithmized, parallelized and pre-convoluted analog signal profiles in the memory device along respective primary continuously extending paths uniquely related to the respective exposure angles,

readout means associated with said memory device,



readout pathway determining means for controlling said readout means to readout respective series of signal values in the memory device along respective secondary continuously extending paths crossing the primary paths and uniquely related to the respective object points, and

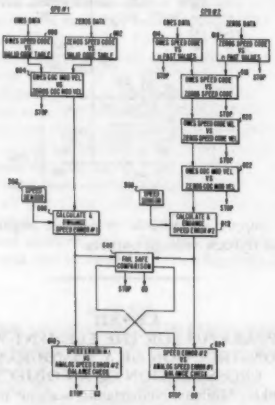
integrating means for integrating the respective series of signal values corresponding to the respective object points to produce object signals.

4,209,828

SPEED DECODING AND SPEED ERROR DETERMINING CONTROL APPARATUS AND METHOD

Larry W. Anderson, W. Mifflin; Donald L. Rush, Penn Hills, and Michael P. McDonald, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1978, Ser. No. 920,317
Int. Cl.[2] B61L *3/20, 27/04*
U.S. Cl. 364—426 **14 Claims**



1. In apparatus for determining the movement of a passenger vehicle moving along a track and in response to a track provided input velocity signal including zeros data and ones data, the combination of

means for determining the vehicle actual speed,

first signal means for providing a first speed signal in accordance with a first decoding of the zeros data and providing a second speed signal in accordance with a first decoding of the ones data,

second signal means for providing a third speed signal in accordance with a second decoding of the zeros data and providing a fourth speed signal in accordance with a second decoding of the ones data,

means operative with at least one of said first and second signal means for determining a speed command for said vehicle,

means for determining a first speed error signal in response to said first speed signal and second speed signal in relation to said actual speed,

means for determining a second speed error signal in response to said third speed signal and said fourth speed signal in relation to said actual speed, and

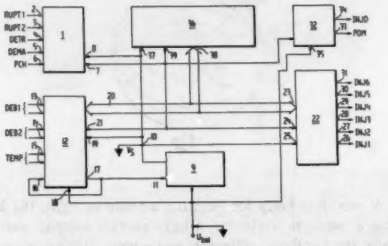
means for comparing the first speed error signal and the second speed error signal to determine one of the movement of the vehicle in response to said speed command or the stopping of the vehicle.

4,209,829

DIGITAL CONTROLLER FOR FUEL INJECTION WITH MICROCOMPUTER

Claude P. Leichle, Le Pecq, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 22, 1978, Ser. No. 880,176
Claims priority, application France, Mar. 15, 1977, 77 07607
Int. Cl.[2] G06F *15/20;* **F02B** *3/00*
U.S. Cl. 364—442 **11 Claims**



1. A digital electronic controller for controlling the duration of fuel injection for an internal combustion engine comprising:

a programmed microcomputer;

a data acquisition system associated with the microcomputer;

a shaping circuit serving as an interface between signal inputs and the microcomputer;

a driver for electrovalves associated with injectors of the internal combustion engine;

an amplifier connected to the output of the microcomputer as a driver circuit for accessories;

first bus means connected to the shaping circuit, the data acquisition system, the microcomputer and the electrovalve driver for carrying control signals between the shaping circuit, the data acquisition system, the microcomputer and the electrovalve driver;

second bus means connected to the data acquisition system, the microcomputer and the electrovalve driver for carrying data between the data acquisition system, the microcomputer and the electrovalve driver;

wherein when the microcomputer receives an interrupt pulse (INT) generated by the shaping circuit when a cylinder of the internal combustion engine is fired, it stops in its program and examines its inputs to determine the row of the cylinder fired and activates the corresponding injector, and the calculation sequence of the program in the microcomputer extends over several cycles, i.e. during the sequence several pulses (INT) are generated;

the microcomputer and the data acquisition system including means for measuring, during a first phase the air supply (M_a) to the motor by counting between two successive interrupt pulses; and means for measuring during a second phase the temperature of the motor cylinder head and a reference voltage alternately, the air supply and temperature measurements being alternated; and

wherein said microcomputer determines the optimum duration of the opening of said injectors by multiplying said air supply measurement (M_a) successively by a richness factor, a coefficient corresponding to the operating conditions of the internal combustion engine calculated by said microcomputer from said temperature measurement and said signal inputs, and by a correction coefficient for input gain obtained from said reference voltage measurement.

4,209,830

FINE OBJECT HAVING POSITION AND DIRECTION SENSING MARK AND A SYSTEM FOR DETECTING THE POSITION AND DIRECTION OF THE SENSING MARK

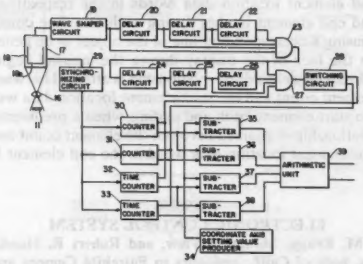
Yoshiaki Arimura, Yokohama; Hideharu Egawa, Tokyo, and Yasoji Suzuki, Ayase, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Division of Ser. No. 789,000, Apr. 19, 1977, abandoned. This application Aug. 9, 1978, Ser. No. 932,400

Claims priority, application Japan, Apr. 19, 1976, 51-43715; Jul. 30, 1976, 51-90176

Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—490 **9 Claims**



1. A method for detecting the position and direction of an object on which are disposed an integrated circuit pattern and at least two key marks having a directionality different from that of the integrated circuit pattern, comprising the steps of scanning the object with a plurality of horizontal scanning lines to generate image signals corresponding to the integrated circuit pattern and the key marks; discriminating the image signals corresponding to the key marks from the image signals corresponding to the integrated circuit pattern on the basis of the difference of the directionality therebetween; detecting the respective positions of the key marks on the scanning region in response to the key mark image signals to obtain two coordinate signals corresponding to the key mark positions respectively; and arithmetically producing the center coordinate of the object on the scanning region from the two key mark coordinate signals.

4,209,831

METHOD AND APPARATUS FOR CONTROLLING AN INTERCONNECTED DISTRIBUTION SYSTEM WHICH INCLUDES A JOINTLY OWNED GENERATING UNIT

Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Sep. 5, 1978, Ser. No. 939,643

Int. Cl.[2] G06F *15/56*

U.S. Cl. 364—492 **2 Claims**

1. A method for controlling the power flow between interconnected power distribution areas while maintaining system frequency at a preset value and allocating a part of the generation of a jointly owned unit to each of the joint owners so as to provide for them a regulating output from said unit, comprising the steps of:

determining the individual differences between working set points determined for each area in a previous period of a control cycle and corresponding limit constrained desired generation values for the present period;

determining the magnitude of those differences of opposite sense which are counter-balancing and the net difference;

adding said individual differences to the corresponding working set points for the previous period for each of the areas whose difference is of a sense opposite that of the net difference;

adding a portion of said magnitude to the working set points for the previous period for each of the areas whose difference is of a sense corresponding to the sense of the net difference, said portion being in accordance with the relative values of those differences to the total of the differences of the same sense as the net difference;

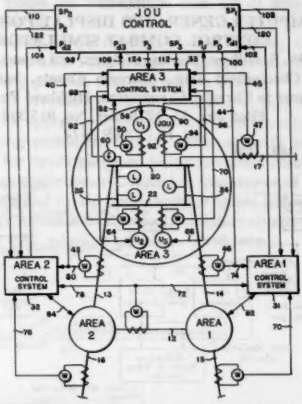
determining if the rate limit of the unit is smaller than said net difference; and alternatively,

if the rate limit is larger,

adding said individual differences to the corresponding working set points, and

if the rate limit is smaller,

determining a working set point for the present period by adding additional amounts to each of the working set points as modified by said addition of portions of said magnitude, said additional amounts being a proportionate part of the rate limit of the unit, said proportionate



part being in accordance with the relative ownership interests in the unit possessed by the areas associated with differences in the sense of the net difference;

determining the set point for said unit by summing said working set points for the area;

controlling said unit to produce an output equal to said unit set point;

determining the unit error associated with each area by subtracting from the working set points for the present period an allocated desired generation value for the previous period;

determining the magnitude of those unit errors of opposite sense which are counter-balancing;

adding to the individual allocated desired generation values for the previous period for all areas whose unit error is of sense opposite the net unit error the value of the corresponding unit error;

adding a portion of the counter-balancing magnitude of the unit errors which are in the same sense as the net unit error to the allocated desired generation values for the previous period to obtain the allocated desired generation values for the present period, said portion being in accordance with the relative magnitude of the individual unit errors to the total of the unit errors in the same sense;

determining a new effective unit error by subtracting from

said working set points the allocated desired generation values;

determining the effective change in generation for said unit as the difference between the present actual generation and the sum of the allocated desired generation values;

determining the allocated desired generation for the present period for units having unit errors of the same sense as the effective change in generation by adding to the value for the previous period a quantity which represents the product of said effective change in generation and the ratio of the associated unit errors to the sum of the unit errors;

allocating to the areas the actual generation of said unit in accordance with the values of the ratios of the associated allocated desired generation values for the present period to their sum;

modifying the tie-line schedule of each of the areas by adding to the schedule the allocated actual generation for the area; and

modifying the automatic generation control of each area in accordance with said allocated actual generation by using said allocated value as a feedback signal in said control by comparing that value with the calculated desired generation value computed by the areas as their requirement for generation from the jointly owned unit.

4,209,832

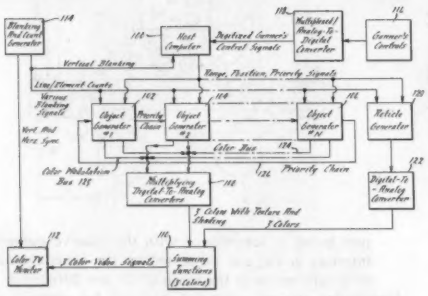
COMPUTER-GENERATED DISPLAY FOR A FIRE CONTROL COMBAT SIMULATOR

Arthur W. S. Gilham, Sterling Heights, and Stuart W. Flockencier, Chesterfield Twp., Macomb County, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 13, 1978, Ser. No. 915,323

Int. Cl.[2] G06F 3/14

U.S. Cl. 364—521 **6 Claims**



1. In a computer-generated video display wherein a picture composed of objects is generated on the face of the display and the shape of each object is synthesized for electronic storage by defining the object as a series of parallel line segments each of which begins at one edge of the object and ends at an opposite edge of the object, the combination with said display of,

a host computer;

a plurality of object generators, each associated with a corresponding object to be displayed, each object generator comprising a microprocessor and a memory;

means for transmitting assigned location data from the host computer to each object generator representing an assigned location for the associated object on the face of the display corresponding to its location in space;

the memory of each object generator comprising a pair of correlated storage matrices storing respective sets of data words wherein each data word of one matrix is correlated with a corresponding data word of the other matrix and each data word of the one matrix represents the beginning, and the correlated data word of the other matrix the end, of a corresponding one of the lines synthesizing the associated object;

a line and element count generator for generating line and element counts corresponding to line and element locations on the face of the display;

means supplying line and element counts from the line and element count generator to each object generator;

means for synchronizing the display with counts of the line and element count generator;

the microprocessor of each object generator comprising means for processing the assigned location data received from the host computer along with the data words in the two matrices of its associated memory to develop pairs of correlated start and end element location data words with each pair of start and end element location data words being correlated to a particular line count;

each object generator further comprising a start element latch and an end element latch and means responsive to each new line count from the line and element count generator for causing the start and end element latches to be respectively loaded with the respective start and end element location data words developed by the microprocessor which are correlated with the new line count; and means comparing the element count with the start and end element location data words in the respective start and end element latches during each new line count and causing a corresponding line of the object to be generated on the face of the display during the interval beginning when a predetermined relationship is attained between the element count and the start element location data word in the start element latch and ending when a predetermined relationship is attained between the element count and the end element location data word in the end element latch.

4,209,833

ELECTRONIC CONTROL SYSTEM

David M. Krupp, Mountain View, and Robert B. Hood, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

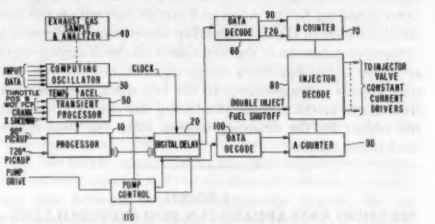
Division of Ser. No. 213,905, Dec. 30, 1971, Pat. No. 3,893,432.

This application Dec. 6, 1974, Ser. No. 530,319

The portion of the term of this patent subsequent to Jul. 8, 1992, has been disclaimed.

Int. Cl.[2] H03K 3/86; F02B 3/00

U.S. Cl. 364—569 **5 Claims**



1. An electronic control system for controlling the duration of operation of repetitively activated equipment which produces repetitive signals, said electronic control system comprising:

means for sensing the values of a plurality of parameters which determine the duration of operation of the repetitively activated equipment;

means for producing a plurality of first signals representing said values;

means for operating on said first signals to produce a second signal representing the duration of operation of said repetitively activated equipment;

means for generating timing signals from the repetitive signals;

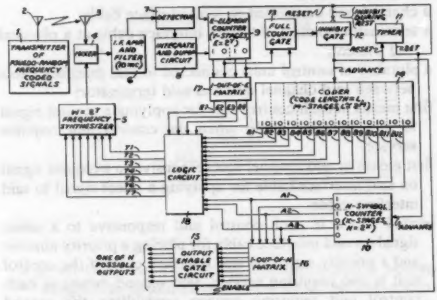
delay means for receiving said timing signals and for digitally shifting said timing signals therethrough at a rate determined by said second signal; and

means, responsive to the time necessary for said timing signals to be shifted digitally through said delay means, for digitally generating (1) starting signals to activate said repetitively activated equipment and (2) terminating signals to deactivate said repetitively activated equipment, the duration of operation of said repetitively activated equipment thereby being controlled by said second signal.

4,209,834
STATE VARIANT CORRELATOR

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 25, 1968, Ser. No. 770,681
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—604 **10 Claims**



1. A state variant correlator comprising:

a source of code signal including a plurality of code sequences each having E-elements, where E is an integer greater than one, each of said elements being represented by one of a first plurality of different frequencies according to a given code;

first means to generate a code identical to said given code;

second means to generate a second plurality of different frequencies;

third means to generate timing pulses defining a given time interval between adjacent ones of said timing pulses;

first counter means coupled to said third means responsive to said timing pulses to produce N-code symbols, where N is an integer greater than one;

second counter means to count said E-elements of each of said first sequences;

fourth means coupled to said first and second counter means and said first means responsive to a full count of said second counter means to change the state of said first means and to read-out the state of said first counter means to produce an output signal for said correlator;

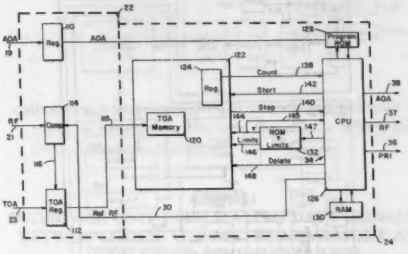
fifth means coupled to said first means, said first and second counter means and said second means responsive to the state of said first means and said first and second counter means to select the output frequencies of said second means from said second plurality of frequencies to provide second sequences of frequencies, each of said frequencies of each of said second sequences being in a predetermined frequency relation with the frequencies representing the corresponding one of said E-elements of each of said first sequences; and

sixth means coupled to said source, said second means and said second counter means to detect each of said E-elements of each of said first sequences and to activate said second counter means with said detected E-elements.

4,209,835
PULSE REPETITION INTERVAL AUTOCORRELATOR SYSTEM

Robert N. Guadagnolo, Burbank, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 21, 1978, Ser. No. 926,971
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—715 **21 Claims**



3. A system for determining PRI values from emitters comprising:

memory means for providing a data set of time ordered TOA words;

first calculator means coupled to said memory means responsive to said TOA words to autocorrelate said TOA words and provide time correlation counts;

a source of periodicity values τ coupled to said calculator means for applying different τ values thereto representing increasing periodicity, to be combined with said TOA words for developing said time correlation counts; and

second calculator means coupled to said source of periodicity values and to said first calculator means and responsive to said τ values and said time correlation counts for determining PRI values of emitters.

4,209,836
SPEECH SYNTHESIS INTEGRATED CIRCUIT DEVICE

Richard H. Wiggins, Jr., Dallas, and George L. Brantingham, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 807,461, Jun. 17, 1977, abandoned. This application Apr. 28, 1978, Ser. No. 901,393
Int. Cl.[2] G06F *15/34*; G10L *1/08*
U.S. Cl. 364—718 **11 Claims**

1. A digital filter speech synthesis circuit responsive to a plurality of digital values representing filter coefficients, said circuit comprising:

(a) a voiced/unvoiced excitation generator for generating voiced and unvoiced excitation signals;

(b) a first memory for storing said plurality of digital values;

(c) a multiplier circuit;

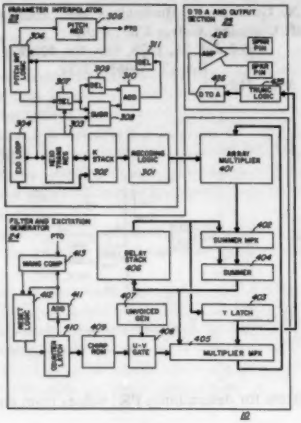
(d) first circuit means for coupling said first memory and said multiplier circuit;

(e) an arithmetic circuit having an input coupled to said multiplier circuit;

(f) a second memory for storing data outputted from said arithmetic circuit;

(g) second circuit means for selectively coupling the outputs of said second memory, said arithmetic circuit and said excitation signals to an input of said multiplier circuit; and

(h) digital-to-analog converter means, coupled to said multiplier circuit, for selectively converting the output of said



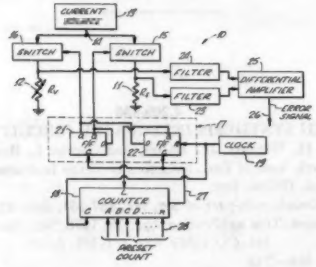
multiplier circuit to analog signals representative of speech.

4,209,837

PROGRAMMABLE CONTROLLER

James R. Brown, Garden Grove, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 3, 1978, Ser. No. 921,538
Int. Cl.[2] G06G *7/66*
U.S. Cl. 364—117 **9 Claims**



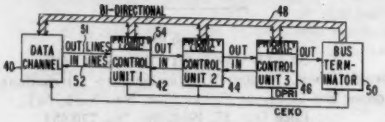
1. A programmable controller for generating a signal for controlling the value of a physical parameter comprising:
- a fixed reference resistor;
- a variable resistor, the resistance value of which changes as a function of the value of said physical parameter;
- a source of current;
- means for switching said current alternately through said fixed and variable resistors;
- means for controlling said switching means to adjust the relative times said current is conducted through said resistors, said relative times being a function of a desired value of said physical parameter; and
- means for determining the difference between the average voltages across said resistors and for generating a control signal proportional thereto.

4,209,838

ASYNCHRONOUS BIDIRECTIONAL INTERFACE WITH PRIORITY BUS MONITORING AMONG CONTENDING CONTROLLERS AND ECHO FROM A TERMINATOR

Thomas E. Alcorn, Jr., San Juan Capistrano, and James L. Konsevich, Mission Viejo, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,236
Int. Cl.[2] G06F *9/18, 3/04*
U.S. Cl. 364—200 **9 Claims**



1. An asynchronous interface system comprising:
- an interface cable;
- a channel unit connected to said interface cable;
- a terminator connected to said interface cable at a physical end thereof;
- a plurality of control units connected to said interface cable between said channel unit and said terminator;
- first means in each control unit for applying a request signal to said interface cable when the control unit requires service;
- first means in said channel unit responsive to a request signal on said interface cable for applying a select signal to said interface cable;
- second means in each control unit responsive to a select signal on said interface cable for placing a priority number and a priority signal on said interface cable if the control unit is one requiring service, said second means in each control unit requiring service controlling the second means in each of the other control units requiring service so that all the priority numbers are removed from said interface cable except for the priority number of the highest priority control unit requiring service;
- means in said terminator responsive to a priority signal on said interface cable for applying an echo signal to said interface cable;
- second means in said channel unit responsive to an echo signal on said interface cable for generating a ready signal;
- third means in each given control unit responsive to a ready signal on said interface cable for generating a first acknowledge signal and, if said given control unit is the highest priority control unit requesting service, also generating a second acknowledge signal, said first and second acknowledge signals being applied to said interface cable; and,
- third means in said channel unit responsive to said first and second acknowledge signals for terminating said ready signal.

4,209,839

SHARED SYNCHRONOUS MEMORY MULTIPROCESSING ARRANGEMENT

Seymour Bederman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,455
Int. Cl.[2] G06F *13/00, 15/16*
U.S. Cl. 364—200 **9 Claims**

1. In a system including a plurality of processors, one of said processors having associated therewith a first memory means, each of said processors having a synchronous memory interface and being adapted for external memory access operation,
- means for sharing said first memory means in alternation between said processors, said means for sharing comprising;
- a gating circuit,

said one of said processors being directly coupled to said first memory means, and another of said processors being coupled to said first memory means via said gating circuit,

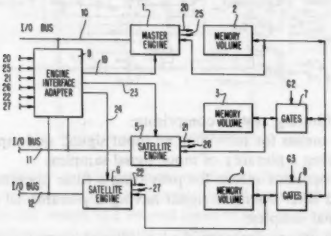
a respective input-output bus coupled to each processor, and

an engine interface adapter coupled to said input-output busses,

each said processor generating an external memory access stop acknowledge signal indicating to said adapter the completion of a memory access operation and an exit signal indicating to said adapter that said processor is in the final phase of execution of an instruction,

said one of said processors providing its stop acknowledge signal to said gating circuit,

said adapter, in response to said exit signal from a given processor, generating an external memory access stop request signal indicating to said given processor to stop memory access execution at the end of the current instruction,



a given processor completing a memory access operation and generating said external memory access stop acknowledge signal in response to said extenal memory access stop request signal to said given processor,

a given processor initiating a memory access operation upon the deactivation of its respective external memory access stop request signal and subsequently generating said exit signal,

the external memory access stop request signal to a given processor becoming deactivated upon the activation of the external memory access stop acknowledge signal from another of said processors,

the gating circuit being controlled by the external memory access stop acknowledge signal of the said one of said processors to permit access to said memory by another of said processors when said one of said processors has completed a memory access operation.

4,209,840

DATA PROCESSING PROTOCOL SYSTEM

James A. Berardi, Highland Park; Darrell Chelcun, Boling Brook; Lawrence J. Dressel, Bartlett, and Bruce D. Westphal, Fox Fiver Grove, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1978, Ser. No. 919,899
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 **15 Claims**

1. A protocol system for a data processing system comprising:

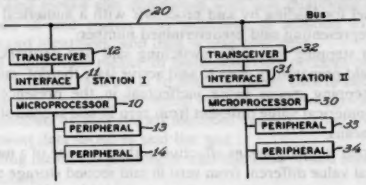
a communication bus; and,

at least first and second remote stations connected to said communication bus, each remote station comprising:

receive means for receiving messages transmitted on said communication bus,

receive interrupt means for generating a receive interrupt for each message received on said communication bus,

quiet interrupt means for generating a quiet interrupt whenever data is not on said communication bus for a predetermined length of time, and



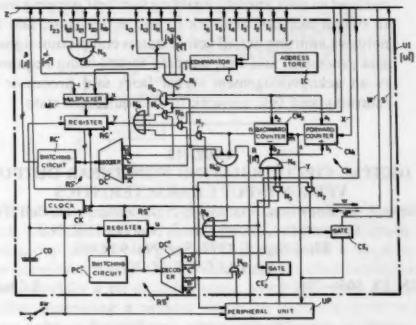
calculation means responsive to said receive and quiet interrupts for calculating the time slot during which said remote station can transmit.

4,209,841

INTERFACE UNIT FACILITATING DATA EXCHANGE BETWEEN CENTRAL PROCESSOR MEMORY AND HIGH-SPEED PERIPHERAL UNIT

Mario Bambara, Milan, and Aldo Ravagnati, Cesano Maderno, both of Italy, assignors to Societá Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jul. 7, 1978, Ser. No. 922,783
Claims priority, application Italy, Jul. 7, 1977, 25473 A/77
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 **7 Claims**



1. In an electronic data-handling system wherein a processor serves a plurality of peripheral units adapted to exchange data with a central memory included in said processor, the latter being programmed to emit input/output instructions respectively directed to said peripheral units via a common transmission channel for initiating the transfer of a series of data words between said central memory and a selected peripheral unit,

the combination therewith of an interface unit facilitating communication between an associated peripheral unit and said processor, said interface unit comprising:

a first sequential network switchable to a plurality of states including a quiescent state, a preparatory state and an active state;

input means connected to said transmission channel and effective in said quiescent state for switching said first network to said preparatory state in response to the appearance of an input/output instruction identifying the associated peripheral unit;

a second sequential network switchable to a plurality of states including a waiting state, an operative state and a terminal state;

first storage means connected to said transmission channel for loading by said processor with a starting address identifying the first one of a series of locations in said central

memory involved in a transfer of a predetermined number of data words;

second storage means connected to said transmission channel for loading by said processor with a numerical value representing said predetermined number;

first stepping means for switching said first network from said preparatory state to said active state thereof, said first stepping means being ineffectual in the presence of a numerical value different from zero in said second storage means;

second stepping means effective in the presence of a numerical value different from zero in said second storage means for switching said second network, in the active state of said first network and in response to a readiness signal from the associated peripheral unit, from said waiting state to said operative state thereof, said second network emitting in said operative state a transfer-request signal to said processor, said second stepping means being responsive to a consent signal from said processor for advancing said second network to said terminal state and thence returning same to said waiting state; and

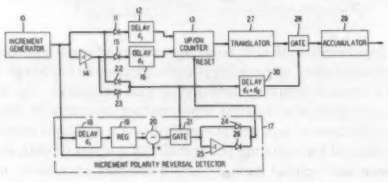
circuit means effective in said terminal state of said second network for modifying the address registered in said first storage means and diminishing the numerical value registered in said second storage means, with resulting repetition of the switching cycle of said second network in the presence of a continuing readiness signal from the associated peripheral unit and in response to successive consent signals from said processor until said numerical value is reduced to zero, thereby enabling said first stepping means to switch said first network to said active state, said first network emitting in said active state a completion signal to said processor, said first stepping means being responsive to an acknowledgement signal from said processor for returning said first network to said quiescent state.

4,209,842

DIGITAL CIRCUITS HAVING NONLINEAR OUTPUT VERSUS INPUT CHARACTERISTICS

Kenneth C. Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 5, 1978, Ser. No. 939,498
Int. Cl.[2] G06F *15/20*
U.S. Cl. 364—718 **8 Claims**



1. In combination

first means for producing increments of either a first or a second type,

second means for counting said increments and for producing outputs equivalent to counts of said increments,

third means for resetting said second means each time said increments from said first means change type,

fourth means for producing outputs having a predetermined relationship with respect to said outputs from said second means, said fourth means outputs being nonlinear with respect to a portion of said second means outputs, and

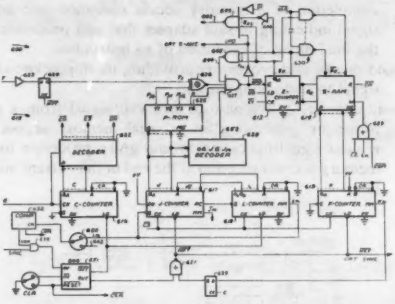
fifth means for accumulating in a positive sense said fourth means outputs caused by said first type increments and in a negative sense said forth means outputs caused by said second type increments.

4,209,843

METHOD AND APPARATUS FOR SIGNAL ENHANCEMENT WITH IMPROVED DIGITAL FILTERING

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Feb. 14, 1975, Ser. No. 550,231
Int. Cl.[2] G06F *15/20, 15/34*
U.S. Cl. 364—724 **30 Claims**



1. A filtering system comprising:

input means for providing an input signal, said input signal having a plurality of input signal samples;

filter operator means for providing a filter operator signal, said filter operator signal having a plurality of operator signal samples;

output means for providing a filtered output signal, said filtered output signal having a plurality of output signal samples; and

update means for updating a plurality of the output signal samples provided by said output means in response to one of the input signal samples from said input means and the plurality of operator signal samples from said filter operator means.

30. A data processing system comprising:

input means for generating an input signal;

signal processing means for generating a processed signal in response to the input signal;

correlation means for generating a correlated signal in response to the processed signal;

compositor means for generating a composited signal in response to the correlated signal; and

output means for outputting the composited signal.

4,209,844

LATTICE FILTER FOR WAVEFORM OR SPEECH SYNTHESIS CIRCUITS USING DIGITAL LOGIC

George L. Brantingham, Plano, and Richard H. Wiggins, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 807,461, Jun. 17, 1977, abandoned.
This application May 12, 1978, Ser. No. 905,328
Int. Cl.[2] G06F *15/34;* G10L *1/00*
U.S. Cl. 364—724 **63 Claims**

1. A method of generating a complex waveform from a digital excitation signal using a number of values representing filter coefficients, said digital excitation signal being updated once a cycle, each said cycle having a plurality of time periods, said method comprising the steps of:

(a) initiating a multiply operation once each time period per cycle with a multiplier, said multiplier requiring a plurality of time periods to complete a multiplication;

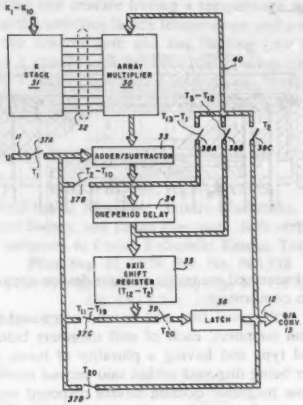
(b) supplying, at least during a majority of the time periods each cycle, selected digital values representing filter coefficients to a first input of said multiplier;

(c) initiating an arithmetic operation once each time period per cycle at an adder/subtractor means, the output of the

multiplier providing an input to the adder/subtractor means;

(d) temporarily storing the output of the adder/subtractor means in a memory;

(e) temporarily storing in a latch memory means selected data from said memory;



(f) selectively providing data outputted from said latch memory means, from said memory and from said adder/-subtractor means to a second input of said multiplier; and

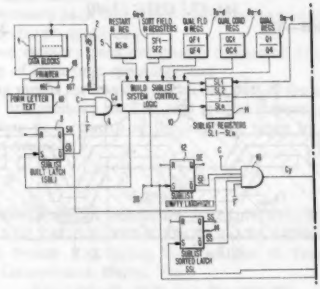
(g) selectively providing data outputted from said adder/-subtractor means, from said memory and from said latch memory means to another input of said adder/subtractor means.

4,209,845

FILE QUALIFYING AND SORTING SYSTEM

David A. Berger, and John W. Welch, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1977, Ser. No. 762,374
Int. Cl.[2] G06F 7/02
U.S. Cl. 364—900 **10 Claims**



1. A system for sorting records of a file of any length stored on any number of blocks on a serial storage device comprising:

first memory means for storing an initial data value;

second memory means for storing qualifying data;

first comparison means for comparing said initial data value with the data of a first field of said records;

second comparison means for comparing said qualifying data with a second field of said records;

third memory means for storing a list including an entry corresponding to each block of the storage device, each of said entries including a record identifier corresponding to the record of said block having, in said first field, the lowest data above said initial data value, said second field of said record also comparing with said qualifying data, each of said entries also including, in addition to said record identifiers, said data of said first field;

third comparison means for comparing data portions of said entries with each other to find the lowest data in said list;

means for accessing the record on said serial storage device identified by said record identifier corresponding to said lowest data found in said list; and

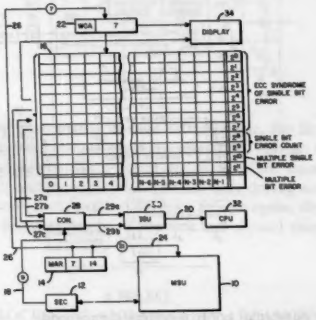
printing means for printing at least one field of said accessed record.

4,209,846

MEMORY ERROR LOGGER WHICH SORTS TRANSIENT ERRORS FROM SOLID ERRORS

Dale K. Seppa, New Brighton, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,706
Int. Cl.[2] G06F 11/00
U.S. Cl. 364—900 **3 Claims**



1. In a data processing system having a memory system which is configured into N word groups of W bit planes per word group and M bits per bit plane which has a single bit error correction means wherein said single bit error correction means provides a bit encoded error word describing the bit position generating a present single bit memory error and having an error logging store containing a plurality of memory error registers for maintaining a history of memory errors within said error logging store, a method of determining whether said present single bit memory error requires maintenance action comprising:

accessing said error logging store upon notification by said single bit error correction means of a present single bit memory error;

comparing said bit encoded error word describing the bit position generating said present single bit memory error, to the bit encoded error word describing the bit position generating a previous single bit memory error within said memory error register corresponding to the word group containing said present single bit memory error;

incrementing a one of a plurality of single bit error counters corresponding to the bit position generating said present single bit memory error within said memory error register within said error logging store if said comparison indicates that said present single bit memory error and said previous single bit memory error occurred at the same bit position;

interrupting said data processing system when said incrementation causes said single bit error counter to reach a predetermined threshold quantity which signifies the declaration of a solid error; and

interrupting said data processing system after said declaration of a solid error and said comparison indicates that the

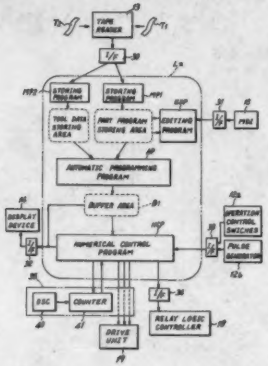
bit position of said present single bit memory error does not equal the bit position of said previous single bit memory error.

4,209,847

COMPUTERIZED NUMERICAL CONTROLLER FOR A MACHINE APPARATUS

Shigeo Noda, Nagoya; Hideo Honma, Kariya, and Sadamu Kato, Takahama, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

Filed May 25, 1978, Ser. No. 909,647
Claims priority, application Japan, Dec. 22, 1977, 52-154708
Int. Cl.² G06F *15/46, 9/16*
U.S. Cl. 364—900 **8 Claims**



1. A numerical control system comprising:

a machine tool having a plurality of feed servomechanisms for machining a workpiece;

data reading means adapted to operate prior to control of said machine tool for reading a first record medium carrying source language instruction data prescribing movement of said machine tool and a second record medium carrying tool data for tools to be used in said machine tool, said source language instruction data being written in an automatic programming language; and

a data processor connected to said data reading means and said machine tool and comprising:

(a) first and second data storage means connected to said data reading means for respectively storing said source language instruction data and said tool data read by said data reading means,

(b) third data storage means for storing a plurality of blocks of machine part instruction data,

(c) language translator means connected to said first, second and third data storage means for translating each block of said source language instruction data and related tool data of said tool data stored in said first and second data storage means, into a number of blocks of machine part instruction data and for storing the same in said third data storage means, and

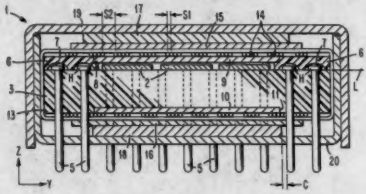
(d) numerical control means connected to said third data storage means and said machine tool for reading out each block of said machine part instruction data from said third data storage means and for numerically controlling said feed servomechanisms of said machine tool in accordance with said read-out block of said machine part instruction data.

4,209,848

MAGNETIC DOMAIN DEVICE SHIELD

Roland J. Braun, Vestal, and Gary R. Carden, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,188
Int. Cl.² G11C *19/08, 5/04*
U.S. Cl. 365—2 **7 Claims**



1. In field accessed magnetic domain device apparatus, the combination comprising:

a pair of orthogonal first and second rotational magnetic field coil members, each of said members being of the solenoid type and having a plurality of turns, said first member being disposed within said second member,

at least one magnetic domain device disposed within said first member in a predetermined region thereof; and

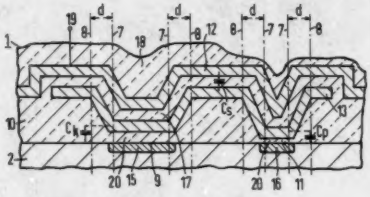
conductive shield means juxtaposed to a predetermined one of said coil members for the flux provided by said magnetic field coil members and passing through said first member to provide a substantially uniform flux distribution over said predetermined region, the perimeter of said shield means being confined within the perimeter of each of said coil members.

4,209,849

NON-VOLATILE MEMORY WHICH CAN BE ERASED WORD BY WORD CONSTRUCTED IN THE FLOATING GATE TECHNIQUE

Hartmut Schrenk, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,320
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743422
Int. Cl.² G11C *11/40*
U.S. Cl. 365—182 **24 Claims**



1. A memory comrising: a plurality of addressable individual storage cells; each cell having at least one field effect transistor (FET) with a floating storage gate entirely surrounded by an insulating layer and which is electrically floating, and with a further insulated controllable control gate, the storage gate and control gate being arranged over a substrate of given lattice temperature and having a channel zone of the FET therein and with the insulating layer being arranged on the substrate; the FET having erasure means for discharge of the floating gate by means of a physical mechanism comprising a direct transfer of electrons from the floating gate through the insulating layer under the influence of a strong connected electrical field result-

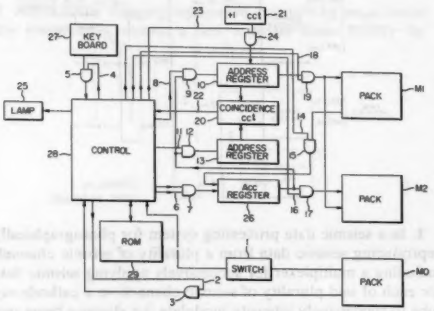
ing by connecting a high voltage between the storage gate and the substrate; the FET having programming means for charging of the floating gate by the same physical mechanism as the erasure of the FET; the programming and erasure means carrying out transfer of electrons during programming and erasure at a same transfer region of the insulating layer but in opposite directions, the electrons which are transferred during programming and erasure having a temperature substantially the same as the substrate lattice temperature; and a capacitance between the control gate and the floating gate being high relative to a capacitance between the floating gate and the channel zone and a capacitance between the floating gate and the substrate at the transfer region at which the transfer of electrons takes place.

4,209,850

ELECTRONIC APPARATUS

Shigemitsu Tazaki, Matsudo; Akihiro Yamataka, Funabashi; Tsunenori Souma, and Tadao Kusumoto, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,118
Claims priority, application Japan, Sep. 30, 1977, 52-118229
Int. Cl.[2] G11C *13/00*
U.S. Cl. 365—189 **8 Claims**



1. An electronic apparatus comprising:
key input means for indicating a copying range;
a main body of the electronic apparatus connected to said key input means;
a first memory pack detachably connected to said main body of electronic apparatus;
a second memory pack detachably connected to said main body of electronic apparatus; and
copying means for transferring all or a part of the content of said first memory pack to said second memory pack according to a control of the copying range by said key input means.

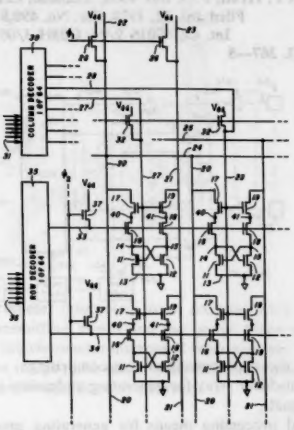
4,209,851

SEMICONDUCTOR MEMORY CELL WITH CLOCKED VOLTAGE SUPPLY FROM DATA LINES

James E. Ponder, Cat Spring, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1978, Ser. No. 925,893
Int. Cl.[2] G11C *7/00, 11/40*
U.S. Cl. 365—190 **9 Claims**

1. A static-refresh memory cell comprising a pair of driver transistors and first and second pairs of coupling transistors of the same channel conductivity type, each of the transistors having a current path and a control electrode, a pair of storage nodes with no d.c. path from said storage nodes to a voltage supply, a pair of complementary data lines, each pair of coupling transistors having their current paths connected in series between one of the data lines and one of the storage nodes, means for precharging the pair of data lines during a first time period, first conductive means for applying operating voltage to the control electrodes of a first of the transistors in each of the pairs of coupling transistors during said first time period, and second conductive means for applying operating voltage to the control electrodes of the other of the transistors in each of the pairs of coupling transistors during a second time period



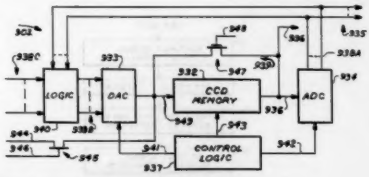
after said first time period in each refresh cycle, the first and second conductive means applying operating voltage to the control electrodes of said first and said other of the transistors coincidentally during a third time period only during an operating read/write cycle and not during a refresh cycle, the third time period being exclusive of the first and second time periods.

4,209,852

SIGNAL PROCESSING AND MEMORY ARRANGEMENT

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Nov. 11, 1974, Ser. No. 522,559
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—222 **40 Claims**



1. An analog memory system comprising:
data input means for generating an analog input data signal;
reference input means for generating an analog input reference signal;
means for generating an analog memory input signal in response to the analog input data signal and the analog input reference signal;
memory storing means for storing the analog memory input signal;
memory output means for generating an analog memory output signal in response to the analog signal stored in said memory storing means, said output means including data output means for generating an analog output data signal in response to the analog memory output signal and reference output means for generating an analog output reference signal in response to the analog memory output signal; and

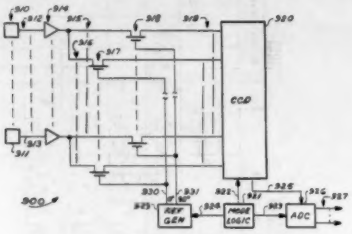
means for processing the analog output data signal in response to the analog output reference signal.

4,209,853

HOLOGRAPHIC SYSTEM FOR OBJECT LOCATION AND IDENTIFICATION

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Jul. 22, 1974, Ser. No. 490,816
Int. Cl.[2] G01S 9/66; G03H 3/00
U.S. Cl. 367—8 **1 Claim**



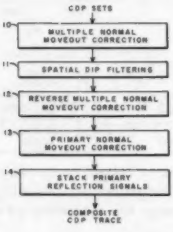
1. A signal processing system comprising:
a transducer array for generating a plurality of analog input signals;
signal processing means for generating processed analog signals in response to the analog input signals; and
shift means for generating a shifted sequence of analog signals in response to the processed analog signals, wherein said shift means includes a CCD shift register for generating a beam formed signal.

4,209,854

METHOD AND SYSTEM FOR ENHANCING PRIMARY SEISMIC REFLECTION SIGNALS IN COMMON DEPTH POINT SETS

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed May 4, 1978, Ser. No. 902,588
Int. Cl.[2] G01B 1/36
U.S. Cl. 367—43 **7 Claims**



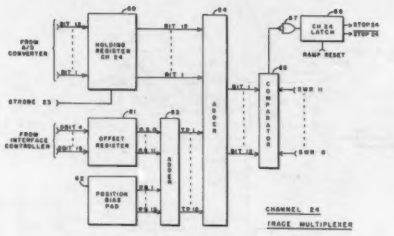
1. Apparatus for enhancing seismic reflection signals which have been recorded in common depth point format, comprising:
(a) a first time shifter to which the seismic signals are applied for displacing each of said signals along the time axis to compensate for time differentials in the occurrence of multiple reflection signals between adjacent seismic signals caused by normal moveout,
(b) a dip filter to which the seismic signals from said first time shifter are applied for rejecting those multiple reflection signals outside the dip passband of said filter,
(c) a second time shifter to which the seismic signals from said dip filter are applied for reversing the time shifts applied to the seismic signals by said first time shifter,
(d) a third time shifter to which the seismic signals from said second time shifter are applied for displacing each of said signals along the time axis to compensate for time differentials in the occurrence of primary reflection signals between adjacent seismic signals caused by normal moveout, and
(e) a stacker which combines the seismic signals from said third time shifter to form a composite signal for each common depth point set of signals, such composite signal having an improved primary-to-multiple reflection signal ratio.

4,209,855

APPARATUS FOR CONTROLLING THE TRANSFER OF SEISMIC DATA FROM MAGNETIC TAPE STORAGE TO A PHOTOGRAPHIC RECORDING

Clarence G. Smith, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,564
Int. Cl.[2] G01V 1/34
U.S. Cl. 367—71 **5 Claims**



1. In a seismic data processing system for photographically reproducing seismic data from a plurality of seismic channels including a multiplexer for successively applying seismic data for each of said plurality of seismic channels to a cathode-ray tube to successively intensity modulate the electron beam one time during each sweep of the electron beam across the face of the cathode-ray tube for each of the seismic channels and a plotter for photographically recording in a side-by-side relationship each sweep of the electron beam, the method comprising the steps of:
(a) converting the seismic data for each seismic channel to an offset binary representation,
(b) producing a first signal identifying a desired trace position on the face of the cathode-ray tube for the location of the zero amplitude point for each of the seismic channels,
(c) producing a second signal representative of the time displacement of the true center of said offset binary representation from said desired trace position,
(d) combining said first signal and said second signal to produce a third signal representative of the correct trace position on the face of the cathode-ray tube for said offset binary representation,
(e) varying said third signal in response to variations in amplitude of said offset binary representation during successive sweeps of the electron beam,
(f) producing a plurality of equally spaced sweep signals, identifying at any given time the location of the electron beam during its sweep across the cathode-ray tube,
(g) comparing said variable third signal with said plurality of sweep signals to produce a fourth signal when the desired trace position identified by said variable third signal is reached during each sweep of the electron beam, and
(h) modulating said electron beam during each sweep in response to said fourth signal whereby the recording of successive sweeps of the electron beam produces a seismic

trace that varies about its zero amplitude point at the desired trace position on the cathode-ray tube.

4,209,856

ACOUSTIC DEVICES

Michael L. Henning, Alhampton, and Michael J. Pittman, Gillingham, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 6, 1978, Ser. No. 867,537

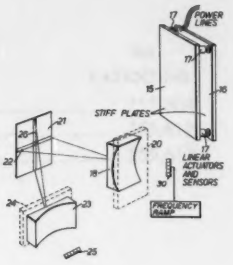
Claims priority, application United Kingdom, Jan. 8, 1977, 682/77

Int. Cl.[2] **G01S** *9/66*

U.S. Cl. 367—87 **8 Claims**

1. An acoustic interferometer arrangement comprising means for transmitting acoustic waves of a predetermined frequency, an acoustic interferometer for receiving said acoustic waves and for preferentially transmitting the waves received from at least one predetermined direction, said interferometer comprising two plane surfaces defining a spacing therebetween, each surface defining a boundary between adjacent regions which are acoustically mismatched, the plane surfaces being in line with one another in a direction perpendicular to the plane surfaces, and adjusting means for adjusting the predetermined frequency to adjust the at least one predetermined direction from which acoustic waves are preferentially transmitted.

7. An acoustic imaging equipment comprising an acoustic wave transmitting means, a first acoustic beam former for causing acoustic waves transmitted by the transmitting means to impinge on an image plane, an acoustic wave receiver and a second acoustic beam former for causing acoustic waves received from said image plane to impinge said receiver, a first



acoustic interferometer interposed in an acoustic wave path between the transmitting means and the image plane and a second acoustic interferometer interposed in an acoustic wave path between the image plane and the acoustic wave receiver whereby to suppress side lobe interference.

DESIGN PATENTS

GRANTED JUN. 24, 1980

ERRATA

For CLASS	See PATENT NO.
D10–074	255,504
D26–048	255,612
D28–008.2	255,613

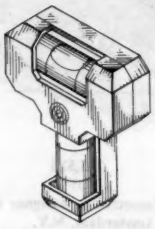
DESIGN PATENTS

GRANTED JUN. 24, 1980

ERRATA

For	By
CLASS	PATENT NO.
D10-D74	249,904
D76-D82	249,413
D25-D26.2	249,413

255,504
SPIRIT LEVEL VIAL CONTAINER
Robert H. Vanderwerf, Redding, Calif., assignor to Vy-Dawn, Incorporated, San Rafael, Calif.
Filed Mar. 13, 1978, Ser. No. 886,300
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74

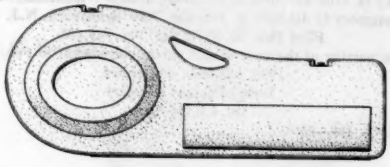


255,505
TWO HAND MITTEN
Edward F. Karolak, 8305 Locust Dr., Kirtland, Ohio 44094
Filed Apr. 20, 1978, Ser. No. 898,427
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—364

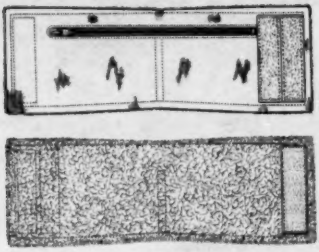
255,506
COMBINED HOLDER AND ORGANIZER FOR THREAD OR THE LIKE
Ann S. Eubanks, and Celeste M. Steinkraus, both of Chattanooga, Tenn., assignors to Flossie, Inc., Chattanooga, Tenn.
Filed Feb. 21, 1978, Ser. No. 879,663
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D3—23

255,507
SHEARS SHEATH
Clair H. Gingher, Jr., Greensboro, N.C., assignor to Gingher, Inc., Greensboro, N.C.
Filed Sep. 7, 1977, Ser. No. 831,335
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30

255,508
CARRYING CASE FOR A TENNIS RACQUET AND BALLS
Robert L. Hughes, 831 Eton Dr., Burbank, Calif. 91504
Filed Jun. 23, 1978, Ser. No. 918,663
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36

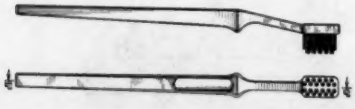


255,509
WRIST PURSE
Michael Nathan, New York, N.Y., and Gary Herman, Philadelphia, Pa., assignors to M. Nathan, Inc., New York, N.Y.
Filed Aug. 16, 1978, Ser. No. 934,088
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—59

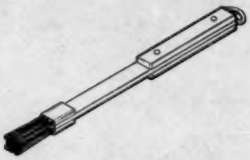


255,510
COMBINED TAPE RULE AND KEY RING
Michel Quenot, Ornans, France, assignor to Stanley-Mabo, France
Filed Aug. 2, 1978, Ser. No. 930,594
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—65

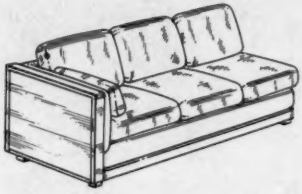
255,511
TOOTHBRUSH
Percy H. Hill, and John G. Kreifeldt, both of Winchester, Mass., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Oct. 10, 1978, Ser. No. 949,487
The portion of the term of this patent subsequent to Feb. 13, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



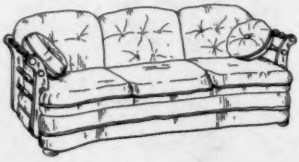
255,512
BRUSH
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,091
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—39



255,513
SOFA
Samuel T. Collins, Bassett, Va., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Feb. 17, 1978, Ser. No. 878,833
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



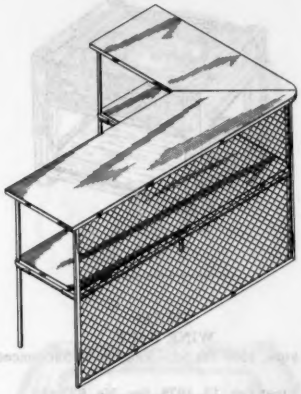
255,514
SEAT OR SIMILAR ARTICLE
David P. G. Williams, Englewood, N.J., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Mar. 17, 1978, Ser. No. 887,527
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



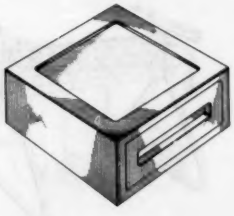
255,515
FURNITURE SEAT
Ira Friedman, Carmel, Calif., assignor to Rowe Furniture Corporation, Salem, Va.
Filed Dec. 19, 1977, Ser. No. 861,656
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

255,516
BAR
Ernest A. Pittman, Courtland, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Feb. 25, 1977, Ser. No. 772,206
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—144

255,517
BAR
Allen W. Gale, Rocky River, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Nov. 14, 1977, Ser. No. 851,526
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144

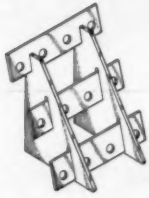


255,518
MODULAR CABINET
Gaylord F. Logsdon, Box 115, West Covina, Calif. 91793
Filed Dec. 5, 1977, Ser. No. 857,212
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



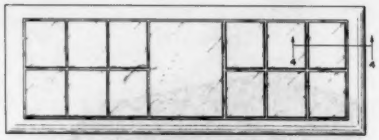
255,519
TABLE OR THE LIKE
Ira Friedman, Carmel, Calif., assignor to Rowe Furniture Corporation, Salem, Va.
Filed Dec. 16, 1977, Ser. No. 861,574
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175

255,520
WINE RACK
Charles F. Lyons, 1500 7th St. - Penthouse, Sacramento, Calif. 95814
Filed Feb. 13, 1978, Ser. No. 877,423
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188

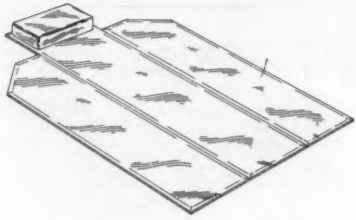


255,521
TABLE BASE
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Feb. 13, 1978, Ser. No. 877,442
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

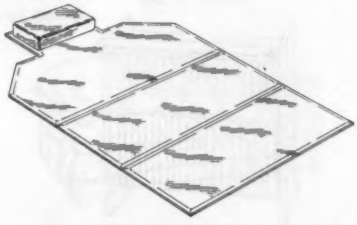
255,522
COMBINED BED HEADBOARD AND PLURAL MOUNT PICTURE FRAME
Richard I. Quigley, Jr., and Penny P. Quigley, both of 110 Cecil Ct., High Point, N.C. 27260
Filed Dec. 9, 1977, Ser. No. 859,229
Term of patent 14 years
Int. Cl. D6—*01, 07*
U.S. Cl. D6—198



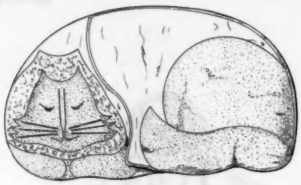
255,523
MAT
George Yarabinec, 1148 Holmden Ave., Cleveland, Ohio 44109
Filed Jun. 30, 1977, Ser. No. 811,776
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



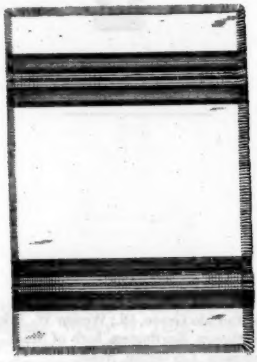
255,524
MAT
George Yarabinec, 1148 Holmden Ave., Cleveland, Ohio 44109
Filed Jun. 30, 1977, Ser. No. 811,778
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



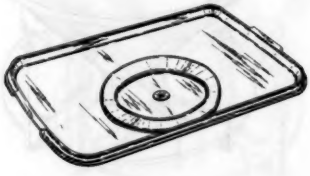
255,525
SLEEPING BAG
Margaret Roberts, Coral Gables, Fla., assignor to Marsupium, Inc., Ft. Lauderdale, Fla.
Filed Jan. 9, 1978, Ser. No. 867,955
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—268



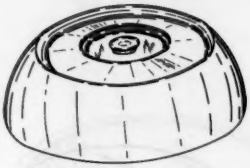
255,526
FRINGED TEXTILE PLACEMAT OR THE LIKE
Susan E. Dempster, Plano, Tex., assignor to Dempster Corporation, Plano, Tex.
Filed Jun. 26, 1978, Ser. No. 919,254
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271

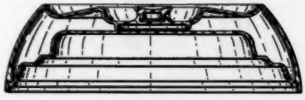


255,527
TRAY
Richard H. Seager, Mystic, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Nov. 21, 1977, Ser. No. 853,647
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—21

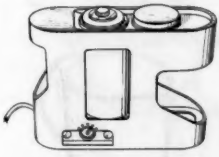


255,528
COVER FOR A PLATE OR THE LIKE
Richard H. Seager, Mystic, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Nov. 21, 1977, Ser. No. 853,646
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40

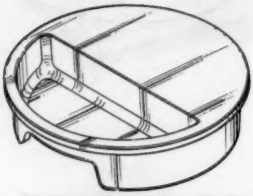




255,529
COFFEE MAKER
Robert Dziekonski, Fort Lee, N.J., assignor to Salton, Inc., Bronx, N.Y.
Filed Jan. 9, 1978, Ser. No. 867,821
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—41



255,530
MEASURING CUP OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 27, 1978, Ser. No. 890,349
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—50



255,531
MEASURING PITCHER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 27, 1978, Ser. No. 890,350
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—50

255,532
CONDIMENT SHAKER
Jon R. Saffell, Glen Dale, W. Va., assignor to Fostoria Glass Company, Moundsville, W. Va.
Filed Feb. 13, 1978, Ser. No. 877,528
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—54

255,533
POPCORN MAKER
Alfred C. Lange, Buffalo Grove, Ill.; Wesley W. Teich, Wayland, and Robert F. Bowen, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 17, 1978, Ser. No. 906,716
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

255,534

CORN POPPING APPLIANCE

Thomas J. Martel, North Reading; Robert F. Bowen, Burlington, both of Mass., and Thomas H. D'Ovidio, Seabrook, N.H., assignors to Raytheon Company, Lexington, Mass.

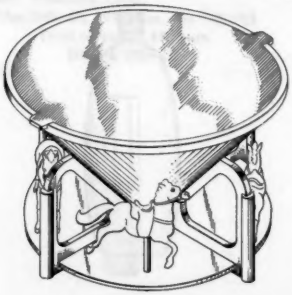
Filed May 17, 1978, Ser. No. 906,719
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

255,535

MICROWAVE CORN POPPING APPLIANCE

George Freedman; Wesley W. Teich, both of Wayland, and Robert F. Bowen, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 17, 1978, Ser. No. 906,720
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



255,536

MICROWAVE CORN POPPER

Robert F. Bowen, Burlington, Mass.; Alfred C. Lange, Buffalo Grove, and Walter B. Herbst, Evanston, both of Ill., assignors to Raytheon Company, Lexington, Mass.

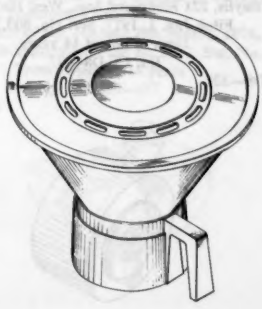
Filed May 17, 1978, Ser. No. 906,715
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95

255,537

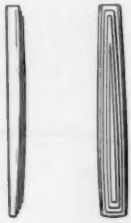
CORN POPPER

Robert F. Bowen, Burlington, Mass.; Alfred C. Lange, Buffalo Grove, and Walter B. Herbst, Evanston, both of Ill., assignors to Raytheon Company, Lexington, Mass.

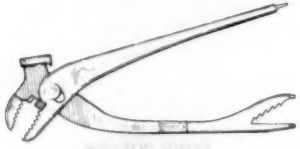
Filed May 17, 1978, Ser. No. 906,717
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



255,538
FLATWARE HANDLE
Sheldon M. Rutter, North Palm Beach, Fla., assignor to The Scott & Fetzer Company, Quikut Division, Cleveland, Ohio
Filed Sep. 7, 1978, Ser. No. 940,488
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—152

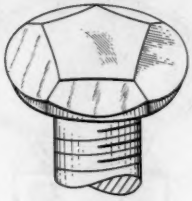


255,539
MULTI-PURPOSE TOOL
Harry J. Graham, 35 Hatherton Crescent, Don Mills, Ontario, Canada (M3A 1P6)
Filed Nov. 25, 1977, Ser. No. 854,994
Claims priority, application Canada, Nov. 11, 1977, 211772
Term of patent 14 years
Int. Cl. D8—*02, 05*
U.S. Cl. D8—22



255,540
LUG NUT LOCK FOR AN AUTOMOBILE WHEEL
Frank E. Baylis, 221 Richmond Ave., West Haven, Conn. 06516
Filed Jun. 1, 1977, Ser. No. 803,373
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331

255,541
SECURITY SCREW
James V. Simone, High Point, N.C., and Charles H. Olmstead, Worcester, Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Sep. 7, 1978, Ser. No. 940,516
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—387



255,542
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed Dec. 19, 1977, Ser. No. 862,232
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

255,543

BOTTLE OR SIMILAR ARTICLE

Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.

Filed Dec. 19, 1977, Ser. No. 862,236
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

255,544

OIL CONTAINER

Romilly H. Humphries, Dover, Mass., assignor to S.A.Y. Industries, Inc., Leominster, Mass.

Filed Aug. 22, 1977, Ser. No. 826,884
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—159

255,545

BOTTLE OR SIMILAR ARTICLE

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

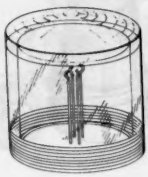
Filed Feb. 15, 1977, Ser. No. 768,919
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168

255,546

DISPLAY CASE FOR PRECIOUS STONES

George Zaidmann, 40, Leopold De Vriesstraat, 2600 Berchem; Jacques Zaidman, 17, Quinten Matsijslei, 2000 Antwerp, and Joseph Zaidman, 119 Groenenborgerlaan, 2610 Wilrijk, all of Belgium

Filed Apr. 10, 1978, Ser. No. 895,159
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

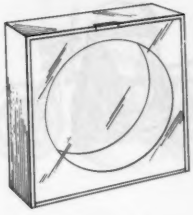


255,547

DISPLAY CONTAINER

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 662,298, Mar. 1, 1976, Pat. No. Des. 246,437. This application Feb. 14, 1977, Ser. No. 768,501
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

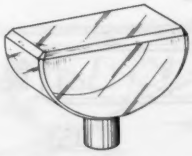


255,548

BOTTLE STOPPER

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

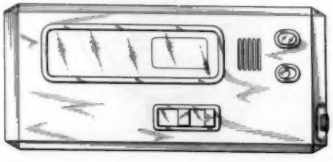
Continuation-in-part of Ser. No. 662,299, Mar. 1, 1976, Pat. No. Des. 247,281. This application Feb. 14, 1977, Ser. No. 768,302
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



255,549
SPRAY PUMP DISPENSING CAP
Donald C. Kirk, Jr., Naugatuck, Conn., assignor to Ethyl Products Company, Richmond, Va.
Filed Mar. 2, 1978, Ser. No. 882,604
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—258

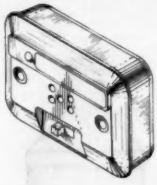
255,550
SPRAY PUMP DISPENSING CAP
Donald C. Kirk, Jr., Naugatuck, Conn., assignor to Ethyl Products Company, Richmond, Va.
Filed Mar. 2, 1978, Ser. No. 882,605
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—258

255,551
CLOCK
Kimio Hirota, Tokyo, Japan, assignor to Kabushiki Kaisha Seikosha, Kyobashi, Japan
Filed Feb. 23, 1978, Ser. No. 880,404
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

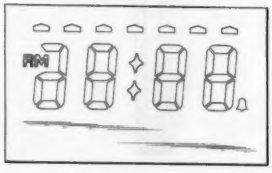


255,552
MAGNETIC LOCATOR
Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.
Filed Jan. 11, 1978, Ser. No. 868,722
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

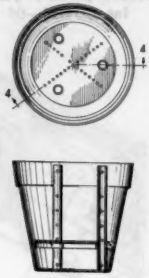
255,553
ALARM FOR OVERDISCHARGE OF STORAGE BATTERY
Toshio Izumi, Nitta, Japan, assignor to Sawafuji Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1977, Ser. No. 855,957
Claims priority, application Japan, Jul. 4, 1977, 52-026243
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



255,554
ELECTRO-OPTIC DIGITAL DISPLAY FOR A TIMEPIECE
Roland C. Pummer, Hightstown, N.J., assignor to Timex Corporation
Filed May 5, 1978, Ser. No. 903,445
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



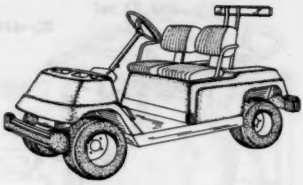
255,555
COMBINED FLOWER POT, INTERNAL SUPPORT AND TUBES THEREFOR
Elmer L. Smith, 6090 Cedarwood Rd., Mentor-on-the-Lake, Ohio 44060
Filed Nov. 13, 1978, Ser. No. 960,287
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



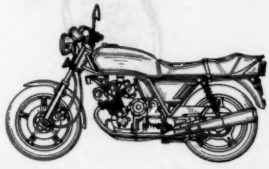
255,556
FINGER RING
Max Bogner, 427 Ft. Washington Ave., New York, N.Y. 10033, and Larry Grun, 64-11 99th St., Rego Park, N.Y. 11374
Filed Mar. 17, 1978, Ser. No. 887,988
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—26

255,557
PENDANT
Sarah Ayson, P.O. Box 1497, New London, Conn. 06320
Filed Jan. 30, 1978, Ser. No. 873,736
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

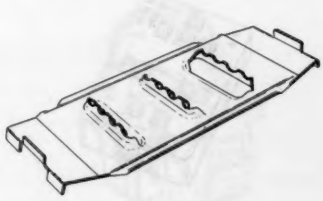
255,558
GOLF CAR
Kenji Ekuan, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Oct. 6, 1977, Ser. No. 839,790
Claims priority, application Japan, Apr. 8, 1977, 52-13224
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—16



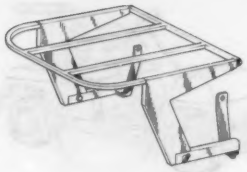
255,559
MOTORCYCLE
Minoru Morioka, Niiza, and Tetuo Ogishima, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1978, Ser. No. 896,900
Claims priority, application Japan, Oct. 21, 1977, 52-42043
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



255,560
TRACTION PLATE FOR VEHICLES
Guy LaPointe, Montreal, Canada, assignor to G.R.S. Tool and Die Inc., Montreal, Canada
Filed Jan. 2, 1979, Ser. No. 659
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

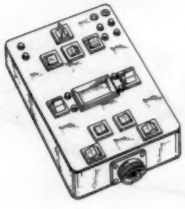


255,561
MOTOR CYCLE PARCEL CARRIER
Juri Pold, and Ilmar Pold, both of 24 Ozone St., Alberton, Australia (5054)
Filed Mar. 10, 1978, Ser. No. 885,457
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

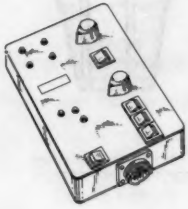


255,562
AUTOMOTIVE HOOD ORNAMENT
Reiner G. Szperkowski, Sendnicher Str. 39, 5400 Koblenz 32, Fed. Rep. of Germany
Filed Jan. 23, 1978, Ser. No. 871,517
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 5476
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197

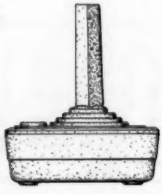
255,563
HAND OPERATED CONTROL UNIT
Brian T. Brooksby, 156 Earlsbrook Rd., Redhill, Surrey; Harold J. Murray, 32 New Odiham Rd., Alton, Hampshire; Anthony Simpson, 65 S. Hill, Godalming, Surrey, and Stuart M. Peterkin, 30 Leewood Way, Effingham, Surrey, all of England
Filed Feb. 21, 1979, Ser. No. 13,390
Claims priority, application United Kingdom, Aug. 24, 1978, 986990/78
Term of patent 14 years
Int. Cl. D13—*32*
U.S. Cl. D13—32



255,564
HAND OPERATED CONTROL UNIT
Brian T. Brooksby, 156 Earlsbrook Rd., Redhill, Surrey; Harold J. Murray, 32 New Odiham Rd., Alton, Hampshire; Anthony Simpson, 65 S. Hill, Godalming, Surrey, and Stuart M. Peterkin, 30 Leewood Way, Effingham, Surrey, all of England
Filed Feb. 21, 1979, Ser. No. 13,392
Claims priority, application United Kingdom, Aug. 24, 1978, 986989
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



255,565
VIDEO GAME CONTROL UNIT
Gerald R. Aamoth, Fremont, and Kevin P. McKinsey, Scotts Valley, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 806,318, Jun. 13, 1977. This application Mar. 16, 1978, Ser. No. 887,145
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12

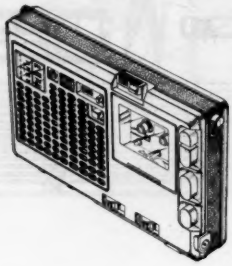


255,566

COMBINED CASSETTE TAPE RECORDER AND RADIO

Michio Imada, Hoya, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,695
Claims priority, application Japan, Sep. 13, 1976, 51-36191
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

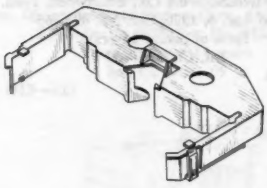


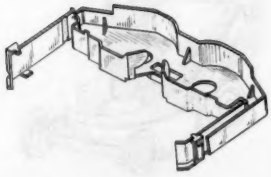
255,567

RIBBON CASSETTE

Myron Beitler, West Orange, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Nov. 21, 1977, Ser. No. 853,556
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D14—11



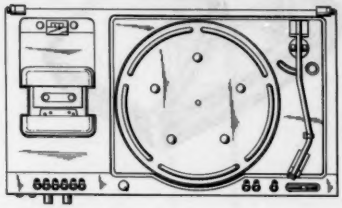


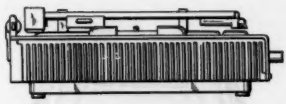
255,568

COMBINED PHONOGRAPH AND CASSETTE PLAYER AND RECORDER OR THE LIKE

Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,424
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 738607
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—20





255,569

COMBINED HEADPHONE AND RADIO

Gilbert K. Lung, Kowloon, Hong Kong, assignor to Sonway Manufacturers Ltd., Kowloon, Hong Kong

Filed Dec. 21, 1977, Ser. No. 862,699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36

255,570

HOUSING FOR A TELEPHONE INSTRUMENT BASE

George M. Janda, Westchester, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 3, 1978, Ser. No. 883,009

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—60

255,571

CITIZENS' BAND RADIO OR SIMILAR ARTICLE

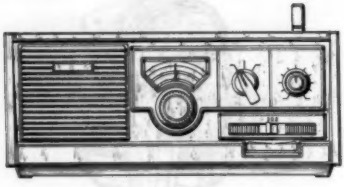
Paul J. Klucznik, Manlius, N.Y., assignor to General Electric Company

Filed Sep. 22, 1977, Ser. No. 835,835

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—71



255,572

CLOCK RADIO OR SIMILAR ARTICLE

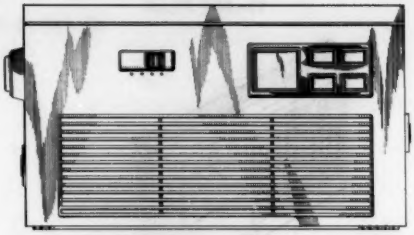
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company

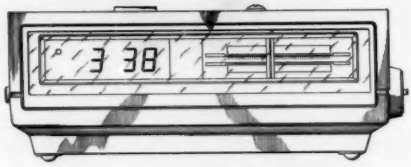
Filed Sep. 21, 1977, Ser. No. 835,410

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—73





255,573

REAR DISCHARGE ROTARY LAWN MOWER

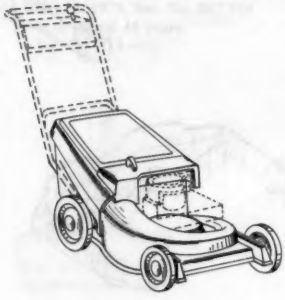
William A. Cox, Brentwood; Paul L. Scott, Lewisburg, and Larry M. Cognata, Nashville, all of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed Apr. 6, 1978, Ser. No. 896,365

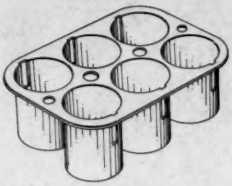
Term of patent 14 years

Int. Cl. D15—*03*

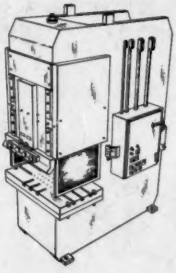
U.S. Cl. D15—14



255,574
LATCH HOOKING YARN DISPENSER
Juanita Carver, 6255 E. Avalon, Scottsdale, Ariz. 85251
Filed May 30, 1978, Ser. No. 910,800
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—78



255,575
OPEN BACK STATIONARY PRESS
Eugene W. Pearson, Orinda, Calif., and Wilbur G. Short, Browns, Ill., assignors to Canron Corp., Oakland, Calif.
Filed Apr. 3, 1978, Ser. No. 893,160
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123

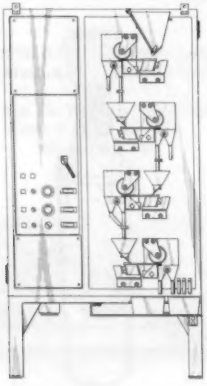


255,576
GUIDE POST ASSEMBLY FOR TOOLS
Olof Dahlqvist, Billnäs, Finland, assignor to OY. Fiskars AB., Helsinki, Finland
Filed Dec. 7, 1977, Ser. No. 858,313
Term of patent 14 years
Int. Cl. D15—*09, 99*
U.S. Cl. D15—138

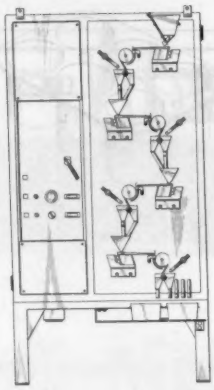
255,577
GUIDE POST ASSEMBLY FOR TOOLS
Olof Dahlqvist, Billnäs, Finland, assignor to OY. Fiskars AB., Helsinki, Finland
Filed Dec. 7, 1977, Ser. No. 858,314
Term of patent 14 years
Int. Cl. D15—*09, 99*
U.S. Cl. D15—138

255,578
GRINDING AND MACHINE DOG
Frank Herczeg, 121 N. Oakley Ave., Mishawaka, Ind. 46544
Filed Oct. 28, 1977, Ser. No. 846,280
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140

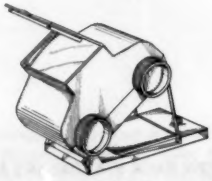
255,579
MAGNETIC SEPARATOR FOR PARTICULATE MATERIALS
Frank S. Knoll, Jacksonville, and Allen D. Nease, Jr., St. Augustine, both of Fla., assignors to Carpco, Inc., Jacksonville, Fla.
Filed Sep. 28, 1977, Ser. No. 837,186
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



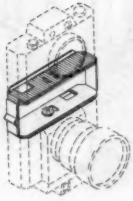
255,580
MAGNETIC SEPARATOR FOR PARTICULATE MATERIALS
Frank S. Knoll, Jacksonville, and Allen D. Nease, Jr., St. Augustine, both of Fla., assignors to Carpco, Inc., Jacksonville, Fla.
Filed Sep. 28, 1977, Ser. No. 837,378
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



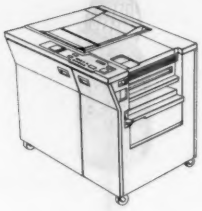
255,581
FILM STRIP VIEWER
Harry Owens, 9300 Venice Blvd., Culver City, Calif. 90230
Filed Mar. 10, 1978, Ser. No. 885,465
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—17



255,582
CAMERA BRACKET
John Lackenby, P.O. Box 364, Englewood, Colo. 80151
Filed Jun. 22, 1977, Ser. No. 808,889
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47



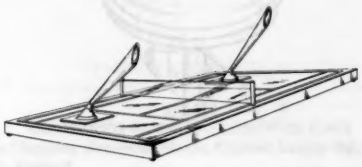
255,583
ELECTROSTATIC COPIER
Tetuya Goto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Nov. 21, 1977, Ser. No. 853,621
Claims priority, application Japan, May 30, 1977, 52/20786
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



255,584
SET OF PRICE INDICATING NUMERALS
Attilio Brentini, "Le Chateau", Crissier, Vaud, Switzerland (CH-1023)
Filed Sep. 7, 1977, Ser. No. 831,353
Claims priority, application Switzerland, Mar. 31, 1977, 109109/77
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—29

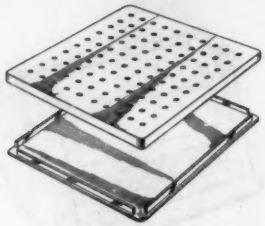
255,585
TELEPHONE INDEX
Leon A. Llanos, Hong Kong, assignor to Uptrend Products Ltd., Hong Kong
Filed Feb. 2, 1978, Ser. No. 874,581
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

255,586
PEN HOLDER
George E. Dane, 1546 - 21st St., Manhattan Beach, Calif. 90266
Filed Jun. 7, 1977, Ser. No. 804,303
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—82



255,587
PEN HOLDER
George E. Dane, 1546 - 21st St., Manhattan Beach, Calif. 90266
Filed Apr. 4, 1978, Ser. No. 893,458
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—82

255,588
BOARD GAME UNIT
Barrie H. McAusland, Leicester, England, assignor to Invicta Plastics Limited, Leicester, England
Filed Aug. 12, 1977, Ser. No. 823,989
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



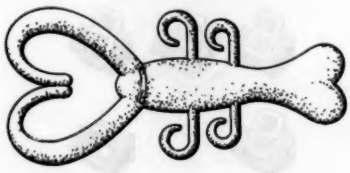
255,589
SIMULATIVE TOY TOP
Ray W. Johnson, 2726 Mason Ter., Wichita, Kans. 67216
Filed Mar. 8, 1978, Ser. No. 884,602
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—98

255,590
LIGHTED TOY SWORD
Janet S. Berling, 141 Ute Dr., Carmel, Ind. 46032; Alice J. Parr, 320 S. Worth, Indianapolis, Ind. 46260; Everett Berling, 2301 W. 64th St., Indianapolis, Ind. 46260, and Edward Parr, 141 Ute Dr., Carmel, Ind. 46032
Filed Dec. 5, 1977, Ser. No. 857,646
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—145

255,591
DOLL
Betsy J. Arnold, 4444 Parks Ave., La Mesa, Calif. 92041
Filed May 30, 1978, Ser. No. 910,593
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168

255,592
GOLF PUTTER HEAD AND SHAFT
John F. Krysakowski, 186 Berrian Rd., Stamford, Conn. 06905
Filed Nov. 7, 1977, Ser. No. 848,809
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—218

255,593
FISHING LURE
Randall L. Hunter, Rte. #1, Box 193, Yorktown, Ind. 47396
Filed Jan. 6, 1978, Ser. No. 867,427
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



255,594

FISHING APPARATUS FOR THE QUICK DISCONNECTION OF THE HOOK FROM THE FISHING LINE

Burton G. Koenig, 807 Avenue C, Bayonne, N.J. 07002

Filed Feb. 21, 1978, Ser. No. 879,867

Term of patent 14 years

Int. Cl. D22—*05*

U.S. Cl. D22—31

255,595

FAUCET

Robert C. Lampe, Stamford, and George Schick, Easton, both of Conn., assignors to Electrolux Corporation, Old Greenwich, Conn.

Filed Sep. 18, 1978, Ser. No. 944,491

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—23

255,596

VACUUM BREAKING TEE

Robert L. Johnson, 590 - 1st Ave. South, Seattle, Wash. 98104

Continuation-in-part of Ser. No. 798,905, May 20, 1977. This application Apr. 16, 1979, Ser. No. 30,536

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—40

255,597

TOILET

Frank T. Sargent, and John M. Antos, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Mar. 2, 1978, Ser. No. 882,957

Term of patent 14 years

Int. Cl. D23—*02*

U.S. Cl. D23—48

255,598

COMBINED BATH AND SHOWER UNIT

Brian Chapman, Sunnyside House, Cryfield Grange Rd., Coventry, England

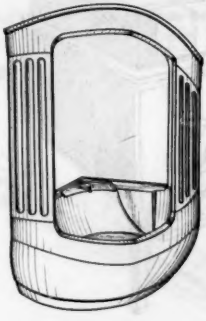
Filed Jan. 10, 1978, Ser. No. 868,333

Claims priority, application United Kingdom, Jul. 13, 1977, 980756/77

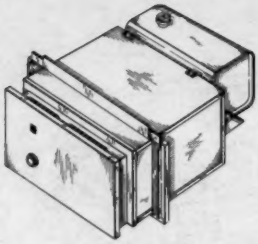
Term of patent 14 years

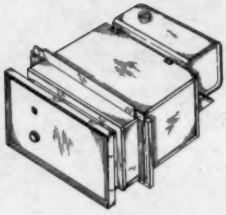
Int. Cl. D23—*02*

U.S. Cl. D23—49

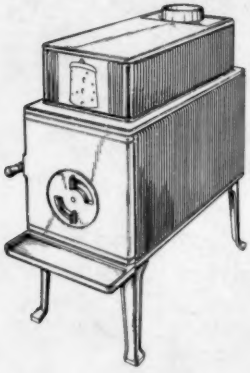


255,599
WINDOW HEATER
Eugene C. Briggs; Robert F. Shaftner, both of Bowling Green, Ky., and Harry J. Giambrone, Dayton, Ohio, assignors to Koehring Company, Milwaukee, Wis.
Filed Apr. 4, 1977, Ser. No. 784,054
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



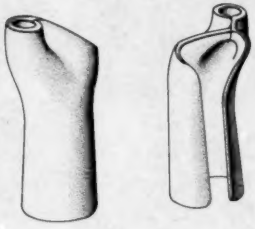


255,600
WOOD-BURNING STOVE
Nicholas G. Marchant, Newbury, England, assignor to Waterford Ironfounders Limited, Bilberry, Ireland
Filed Jan. 30, 1978, Ser. No. 873,558
Claims priority, application United Kingdom, Sep. 3, 1977, 981384/77
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

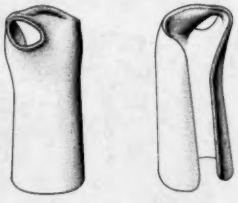


255,601
PIPETTE TIP
Donald H. De Vaughn, San Francisco, Calif., assignor to Bio-Plas, San Francisco, Calif.
Filed Oct. 25, 1977, Ser. No. 845,249
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

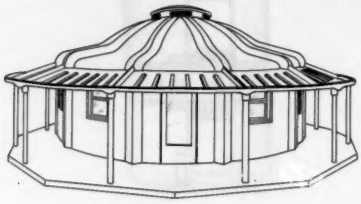
255,602
WRIST AND THUMB ZONE IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Mar. 16, 1978, Ser. No. 887,459
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



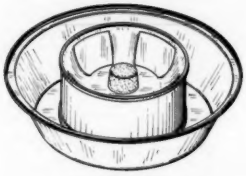
255,603
WRIST ZONE IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Mar. 16, 1978, Ser. No. 887,461
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



255,604
BUILDING
Jacques Berce, Puiseaux 45, Desmonts, quartier ol' en haut 45390, and Patrick Mournaud, 28170 - Chateauneuf en Thymerais, Levasville, both of France
Filed Oct. 27, 1978, Ser. No. 955,397
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



255,605
COMBINED PIPE RACK AND ASHTRAY
Paul A. Hurtado, 2101 Marlow Rd., Toledo, Ohio 43613
Filed Jul. 31, 1978, Ser. No. 929,421
Term of patent 14 years
Int. Cl. D27—*02, 03*
U.S. Cl. D27—25



255,606
EYE COSMETIC SHIELD
Alexandria Garcia, 6922 Day, Dallas, Tex. 75227
Filed Sep. 28, 1977, Ser. No. 837,643
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—9

255,607
NAIL FILE
Charles G. Tate, Jr., 19 S. Locust Ave., North Providence, R.I. 02908
Filed Aug. 17, 1978, Ser. No. 934,638
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—59

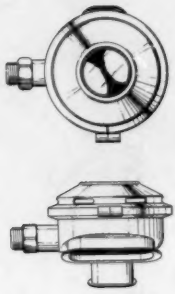
255,608
HAIR WAVE SETTING ROD
John Cabiddu, 3009 Knox Ave. South, Minneapolis, Minn. 55408
Filed Oct. 22, 1978, Ser. No. 944,915
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

255,609

UNDERWATER BREATHING REGULATOR

Stanley Rasocha, Glenview, Ill., assignor to Dacor Corporation, Northfield, Ill.

Filed Dec. 16, 1977, Ser. No. 867,594
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D29—6

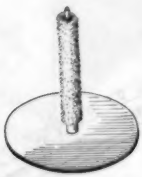


255,610

SELF-GROOMING AID FOR CATS

Sharon Clarke-Fodor, P.O. Box 72, Green Farms, Conn. 06436

Filed Sep. 1, 1978, Ser. No. 938,864
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

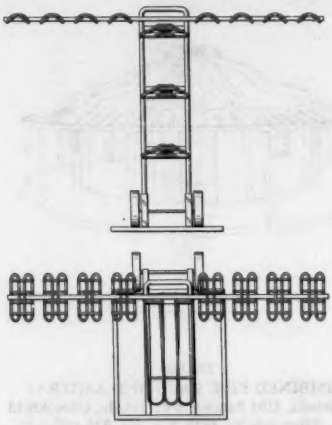


255,611

COMBINED SADDLE AND TACK RACK

Bloxum H. Love, 5333 Lanibeth, Houston, Tex. 77032

Filed May 5, 1978, Ser. No. 903,387
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—45



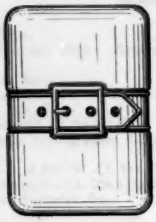
255,612

LANTERN

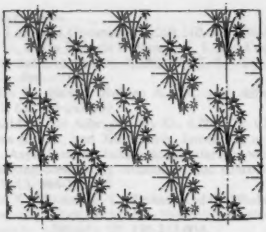
Chung-Chee Wong, Kowloon, Hong Kong, and David R. Dalton, Sydney, Australia, assignors to Sonca Industries Limited, Kowloon, Hong Kong and Union Carbide Australia Limited, Sydney, Australia

Filed May 15, 1978, Ser. No. 906,280
Claims priority, application United Kingdom, Dec. 13, 1977, 982597/77
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—48

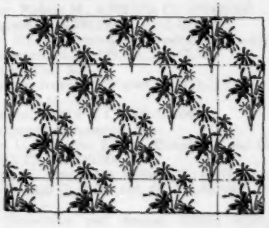
255,613
BAR OF SOAP
Giuliana Camerino, Castello 6123, Venice, Italy
Filed Oct. 31, 1977, Ser. No. 847,419
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.2



255,614
NON-WOVEN SHEET MATERIAL OR THE LIKE
Donald T. Appleman, and Paul R. Campbell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 15, 1978, Ser. No. 905,629
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 C



255,615
NON-WOVEN SHEET MATERIAL OR THE LIKE
Donald T. Appleman, and Paul R. Campbell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 15, 1978, Ser. No. 905,630
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 C



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TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JUNE, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Davis, Abraham D.; and Pinter, Kenneth W., 4,209,565, Cl. 428-347.000.

A. O. Smith Corporation: *See*—
Stewart, Joe W., 4,209,555, Cl. 427-292.000.

A. Zildjian Export Co., Inc.: *See*—
Henrit, Robert, 4,208,942, Cl. 84-421.000.

Aasen, Leon J. Boat trailer loading guide. 4,209,279, Cl. 414-534.000.

AB Gustavsberg: *See*—
Bremholt, Sven A. T., 4,209,597, Cl. 525-376.000.
Soderland, Bengt, 4,209,093, Cl. 206-425.000.

AB Karlstads Mekaniska Werkstad: *See*—
Stenberg, Erik G.; Wahren, Douglas; and Zotterman, Carl, 4,209,360, Cl. 162-203.000.

Abbott Laboratories: *See*—
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.

Abe, Kumiomi; and Fiujita, Susumu, to Konan Camera Research Institute. Adjustable microscope for following axial displacement of an object. 4,209,225, Cl. 350-46.000.

Abramov, Jury M.; Kozlov, Alexandr N.; and Sinelnikova, Svetlana E. Magnetic field gradient measuring device. 4,209,746, Cl. 324-301.000.

ABU Aktiebolag: *See*—
Karlsson, Jarding U., 4,209,141, Cl. 242-84.2C.

ACF Industries, Incorporated: *See*—
Reedy, Charles E., 4,209,036, Cl. 137-382.500.

Ackery, Lionel J.: *See*—
McMurtry, David R.; and Ackery, Lionel J., 4,209,206, Cl. 308-9.000.

Ackley, Charles E., Jr.: *See*—
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,208,962, Cl. 101-35.000.

Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., to R. W. Hartnett Company. On-end and wrap-around capsule printing apparatus. 4,208,962, Cl. 101-35.000.

Acurex Corporation: *See*—
Bendler, Robert K., 4,209,774, Cl. 340-347.0CC.

Adams, John R. Adjustable storage system for fishing rods. 4,209,098, Cl. 211-60.00R.

Aeroquip Corporation: *See*—
Upham, Neil R., 4,209,037, Cl. 137-527.000.

AEW Engineering Co. Ltd.: *See*—
Whitehouse, John A., 4,208,936, Cl. 83-713.000.

Agence Nationale de valorisation de la Recherche (ANVAR): *See*—
Petiau, Raymond H., 4,209,162, Cl. 249-206.000.

AGFA-Gevaert, A.G.: *See*—
Berthold, Werner; Botta, Artur; von Konig, Anita; and Rasp, Christian, 4,209,583, Cl. 430-418.000.

Ahlstone, Arthur G., to Vetco, Inc. Rigid connector for large diameter pipe. 4,209,193, Cl. 285-309.000.

Air Products and Chemicals, Inc.: *See*—
Kim, Bang M.; Quinn, John A.; and Graves, David J., 4,208,902, Cl. 73-19.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kitamura, Kazuhiko, 4,208,994, Cl. 123-119.00A.
Minamoto, Naoki; Oguma, Tomio; and Sakakibara, Naoji, 4,208,746, Cl. 4-448.000.

Akademia Rolniczo-Techniczna: *See*—
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.

Akatsuka, Tadami: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, 4,209,459, Cl. 260-507.00R.

Akeret, Rudolf, to Swiss Aluminium Ltd. Process and equipment for the commercial indirect extrusion of long lengths of metal, in particular long as-cast billets into sections or the like. 4,208,897, Cl. 72-253.00R.

Akiyama, Hiroshi; Kuyama, Hiroshi; and Oinuma, Kohji, to Rohm and Haas Company. Sulphonation method for manufacture of a cation exchange resin. 4,209,592, Cl. 521-33.000.

Akiyama, Toshiyuki: *See*—
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.

Aktiebolaget Bofors: *See*—
Davegardh, Tore; Gellerstedt, Nils; and Sahlin, Folke, 4,208,945, Cl. 86-20.00R.
Mattson, Kjell, 4,209,146, Cl. 244-3.270.

Aktiebolaget SKF: *See*—
Blomqvist, Leif; and Goransson, 4,209,210, Cl. 308-234.000.

Albert, Robert E., to Du Pont de Nemours, E. I., and Company. Herbicidal complex and formulation. 4,209,619, Cl. 544-211.000.

Albright, Jay D.: *See*—
Dusza, John P.; Hardy, Robert A., Jr.; and Albright, Jay D., 4,209,621, Cl. 544-263.000.
Trust, Ronald I.; and Albright, Jay D., 4,209,626, Cl. 546-119.000.

Alcorn, Thomas E., Jr.; and Konsevich, James L., to Sperry Rand Corporation. Asynchronous bidirectional interface with priority bus monitoring among contending controllers and echo from a terminator. 4,209,838, Cl. 364-200.000.

Alexander, John B.; Dennehey, T. Michael; and Goldhaber, Richard P., to Baxter Travenol Laboratories, Inc. Sterile connection system using flexible container. 4,209,013, Cl. 128-213.00A.

Alford, James R., to UMC Industries, Inc. Vendor with door and shelf interlock. 4,209,211, Cl. 312-215.000.

Alford, Robert S.: *See*—
Wood, Kenneth O.; and Alford, Robert S., 4,209,239, Cl. 354-4.000.

Alfred Honsel, Nieten - und Metallwarenfabrik, Firma: *See*—
Elflein, Lorenz, 4,208,901, Cl. 72-391.000.

Allen, Henry C.: *See*—
Pierce, Everette M.; and Allen, Henry C., 4,209,351, Cl. 149-19.100.

Allied Chemical Corporation: *See*—
Booth, Frederick C.; and Stephenson, Robert L., 4,209,142, Cl. 242-107.600.
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,209,654, Cl. 585-465.000.
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,209,570, Cl. 428-606.000.

Allied Products Corp.: *See*—
Husky, Glover A., 4,208,856, Cl. 53-438.000.

Allis-Chalmers Corporation: *See*—
Bliemeister, Robert M., 4,209,175, Cl. 277-84.000.
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Alper, Daniel D., to Burroughs Corporation. Power driven paper take-up mechanism. 4,209,139, Cl. 242-67.30R.

Alpine Industries, Inc.: *See*—
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Alps Electric Co., Ltd.: *See*—
Kondo, Shiro, 4,209,674, Cl. 200-16.00R.

Aluminum Company of America: *See*—
Carpenter, L. Graydon; Kinosz, Donald L.; and Cedro, Vito, III, 4,209,496, Cl. 423-210.000.
Dunn, Lloyd G.; and Willis, Wilburn C., 4,209,102, Cl. 215-329.000.
Hawkins, Ronald G., 4,209,659, Cl. 174-42.000.

Amada, Eiichi: *See*—
Miyata, Masachika; and Amada, Eiichi, 4,209,771, Cl. 340-347.0DD.

Amaki, Takashi; and Mamiya, Mitsutoshi, to NGK Insulators, Ltd. Grinding attachment for porcelain bodies. 4,208,843, Cl. 51-207.000.

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Dreyer, Heinz; and Wiemeyer, Benno, 4,208,974, Cl. 111-85.000.

American Can Company: *See*—
Gallivan, Robert M.; and Matschei, Peter K., 4,209,647, Cl. 568-762.000.
Klein, Albert J.; and Hooper, William H., 4,209,326, Cl. 75-211.000.

American Colloid Company: *See*—
Clem, Arthur G., 4,209,568, Cl. 428-454.000.

American Cyanamid Company: *See*—
Dusza, John P.; Hardy, Robert A., Jr.; and Albright, Jay D., 4,209,621, Cl. 544-263.000.
Phipps, Robert H., 4,209,707, Cl. 250-544.000.
Trust, Ronald I.; and Albright, Jay D., 4,209,626, Cl. 546-119.000.
Wissner, Allan, 4,209,639, Cl. 562-426.000.

American Hoechst Corporation: *See*—
Ong, Helen H.; and Profitt, James A., 4,209,625, Cl. 546-17.000.

American Home Products Corporation: *See*—
Lapidus, Milton; and Garsky, Victor M., 4,209,441, Cl. 260-112.50S.
Sarantakis, Dimitrios, 4,209,426, Cl. 260-8.000.
Sellstedt, John H.; Guinosso, Charles J.; Klaubert, Dieter H.; and Shriver, David A., 4,209,528, Cl. 424-304.000.

American Optical Corporation: *See*—
Grolman, Bernard; and Richards, William, 4,208,800, Cl. 33-200.000.
Newcomb, Paul D.; Hopkins, Ethan C.; and Davignon, Paul A., 4,209,289, Cl. 425-410.000.

American Safety Equipment Corporation: *See*—
Close, Albert R., 4,209,186, Cl. 280-803.000.

Amerman, Gary S.: *See—*
Hermann, James R.; and Amerman, Gary S., 4,208,749, Cl. 7-106.000.

Ames, Adolf; Wagner, Alfred; and Zillmann, Ulrich, to Swiss Aluminium Ltd. Process and device for extruding a plurality of composite sections. 4,208,898, Cl. 72-258.000.

AMP Incorporated: *See—*
Proietto, Nazario, 4,209,219, Cl. 339-99.00R.

Anaren Microwave, Incorporated: *See—*
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,209,791, Cl. 343-854.000.

Anderson, Andrew W., to Scandia Packaging Machinery Company. Feeding and cutting mechanism. 4,208,932, Cl. 83-303.000.

Anderson-Cook, Inc.: *See—*
Killop, James T., 4,208,773, Cl. 29-90.00B.

Anderson, James D., to Union Carbide Corporation. Gelatin benzimidazole blends as inhibitors for carboxylic acids. 4,209,418, Cl. 252-148.000.

Anderson, Larry W.; Rush, Donald L.; and McDonald, Michael P., to Westinghouse Electric Corp. Speed decoding and speed error determining control apparatus and method. 4,209,828, Cl. 364-426.000.

Ando, Haruhisa: *See—*
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.

Angliss, Ian B., to Commonwealth Scientific and Industrial Research. Application of liquid to yarns. 4,208,891, Cl. 68-19.000.

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Anver Bioscience Design, Inc.: *See—*
Banigan, Thomas F.; and Verbiscar, Anthony J., 4,209,539, Cl. 426-319.000.

Anzai, Masayasu; and Terashima, Isamu, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Apparatus for monitoring the concentration of toner in a developer mix. 4,208,985, Cl. 118-712.000.

Anzai, Nobuo; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator control apparatus. 4,209,082, Cl. 187-29.00R.

Aoki, Kiyoshi, to Tokyo Shibaura Electric Co., Ltd. Logic circuit. 4,209,715, Cl. 307-291.000.

Aono, Masanori: *See—*
Ohyama, Masumi; Sakuragi, Johji; Aono, Masanori; and Ochi, Takeshi, 4,209,783, Cl. 340-152.00T.

Aoyama, Shigetsune; and Asai, Kiyokazu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Device for inspecting spot welds. 4,208,917, Cl. 73-644.000.

Aoyama, Toshimi: *See—*
Takanashi, Hiroshi; Aoyama, Toshimi; and Nakane, Hisashi, 4,209,581, Cl. 430-283.000.

Appel, Douglas C.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,209,063, Cl. 165-95.000.

Apple, Charles N., Sr., to Metafab Industries, Inc. Knockdown chair. 4,209,198, Cl. 297-443.000.

Applied Vinyl Corporation: *See—*
Lobach, James L., 4,208,748, Cl. 5-451.000.

Arai, Akihiro: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.

Archibald, John L.; and Ward, Terence J., to John Wyeth & Brother Limited. Anti-depressant indole derivatives. 4,209,521, Cl. 424-267.000.

Arco Polymers, Inc.: *See—*
Welsh, David; and Milkovich, Ralph, 4,209,594, Cl. 525-71.000.

Arditty, Herve J.; Lehmann, Matt; Moon, Jorlin E.; and Bakar, Sherwyne R. Optical probe assembly for detecting the position of an object surface and method. 4,209,252, Cl. 356-4.000.

Arend, Raymond J.; and VerBerkmoes, John A., to Bastian Blessing Co. Inc. Self-serving multi-tiered counter display stand. 4,208,972, Cl. 108-111.000.

Arimura, Yoshiaki; Egawa, Hideharu; and Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Fine object having position and direction sensing mark and a system for detecting the position and direction of the sensing mark. 4,209,830, Cl. 364-490.000.

Arita, Hachiro, to Matsushita Electric Industrial Co., Ltd. Projection type television set. 4,209,807, Cl. 358-237.000.

Arita, Yoichi; Yada, Shinko; and Onishi, Ko, to Sanyo Electric Co., Ltd.; and Osaka Gas Co., Ltd. Apparatus for integrating electrolytic corrosion associated voltage. 4,209,376, Cl. 204-195.00C.

Armco Inc.: *See—*
Lawson, John E., 4,209,191, Cl. 285-84.000.

Armour and Company: *See—*
Skidmore, Lawrence M., 4,208,933, Cl. 83-367.000.

Arndt, Friedrich: *See—*
Nusslein, Ludwig; and Arndt, Friedrich, 4,209,627, Cl. 548-130.000.

Arnold, Dan M.; Peelman, Harold E.; Langford, Obie M.; Paap, Hans J.; and Supernaw, Irwin R., to Texaco Inc. Detection of impurities in fluid flowing in refinery pipeline or oil production operations using nuclear techniques. 4,209,695, Cl. 250-270.000.

Arnot, Larry K.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,209,063, Cl. 165-95.000.

Aro Corporation, The: *See—*
Dominique, Cecil G., 4,209,105, Cl. 220-93.000.

Arthur D. Little, Inc.: *See—*
Merrill, Richard E.; and Massucco, Arthur A., 4,209,582, Cl. 430-308.000.

Asahi Glass Company Limited: *See—*
Munekata, Seiji; Ukihashi, Hiroshi; Yamabe, Masaaki; and Kaneko, Isamu, 4,209,635, Cl. 560-183.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.
Seko, Maomi; Ogawa, Shinsaku; and Takemura, Reiji, 4,209,369, Cl. 204-98.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro; and Sawada, Yoshio, 4,209,245, Cl. 354-51.000.
Nomura, Katsuhiko; and Monde, Hirao, 4,209,246, Cl. 354-153.000.
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.

Asai, Kiyokazu: *See—*
Aoyama, Shigetsune; and Asai, Kiyokazu, 4,208,917, Cl. 73-644.000.

Asano, Masaharu, to Nissan Motor Company, Limited. Electronic closed loop air-fuel ratio control system. 4,208,990, Cl. 123-32.0EE.

ASEA Aktiebolag: *See—*
Larker, Hans, 4,209,420, Cl. 252-301.10W.
Ottesen, Otto, 4,209,763, Cl. 336-70.000.

Ashland Oil, Inc.: *See—*
Gardikes, John J.; and Toeniskoetter, Richard H., 4,209,056, Cl. 164-16.000.

Astoin, Jacques N.: *See—*
Riveron, Andre M.; Astoin, Jacques N.; Marivain, Alain D.; Crucifix born Depheimer, Micheline; Lapotre, Martine M.; and Torrens born Le Gargean, Yvette M., 4,209,517, Cl. 424-248.570.

Atsumi, Toshio; Tarumi, Yuzo; and Kiyohara, Takao, to Sumitomo Chemical Company, Limited. Imidazole acetic acid derivatives. 4,209,525, Cl. 424-273.00R.

Auer, Eberhard: *See—*
Ohorodnik, Alexander; Auer, Eberhard; and Gehrmann, Klaus, 4,209,460, Cl. 260-544.00Y.

Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research and Development Company. Decomposition of cumene hydroperoxide using a stable carbonium, tropylium or oxonium salt as the catalyst. 4,209,465, Cl. 568-385.000.

Auto Tank AB: *See—*
Westlund, Jan, 4,209,712, Cl. 307-118.000.

Automobiles Peugeot: *See—*
Ducrot, Pol B. L.; and Cloup, Jean-Paul, 4,209,720, Cl. 310-45.000.

Automotive Products Limited: *See—*
Hales, Eric C., 4,209,200, Cl. 303-22.00R.

Avco Corporation: *See—*
Vasilos, Thomas, 4,209,560, Cl. 428-109.000.

Avrich, Joseph; Ripley, Arthur C.; and Ould, Robert. Anti-tampering device for valve stems. 4,208,893, Cl. 70-178.000.

Awamura, Daikichi: *See—*
Uchiyama, Yasushi; and Awamura, Daikichi, 4,209,257, Cl. 356-394.000.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGF_2 analogs. 4,209,637, Cl. 560-121.000.

Babcock & Wilcox Company: *See—*
Shenker, Jack D., 4,209,028, Cl. 134-56.00R.

Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., to Wynn Oil Company. Engine cooling system flushing apparatus and method. 4,209,063, Cl. 165-95.000.

Bacardit, Juan S., to Bendiberica, S.A. Power steering mechanism. 4,208,951, Cl. 91-422.000.

Backhouse, Alan J. Dispersion preparation. 4,209,435, Cl. 260-29.6RW.

Bacus, James W., to Rush-Presbyterian-St. Luke's Medical Center. Method for the preparation of blood samples for automated analysis. 4,209,548, Cl. 427-2.000.

Bader, Antonie: *See—*
Bader, Eugen; and Jauch, Kurt, 4,208,779, Cl. 29-563.000.

Bader, Eugen; and Jauch, Kurt, to Bader, Antonie. Automatic transfer machine. 4,208,779, Cl. 29-563.000.

Baer, William K.; Nielsen, Ralph R.; and Vartiak, Joseph F., to Nalco Chemical Company. Soil anti-crustant. 4,208,973, Cl. 111-1.000.

Baeten, Franciscus N. C.: *See—*
Jack, Alexander G.; Baeten, Franciscus N. C.; and van de Bilt, Johannes, 4,209,726, Cl. 313-174.000.

Bakar, Sherwyne R.: *See—*
Arditty, Herve J.; Lehmann, Matt; Moon, Jorlin E.; and Bakar, Sherwyne R., 4,209,252, Cl. 356-4.000.

Baker International Corporation: *See—*
McCombs, Russell L.; and Motsinger, James V., 4,208,775, Cl. 29-240.000.
Motsinger, James V., 4,208,919, Cl. 73-761.000.

Baker, Richard H., to Exxon Research & Engineering Co. Transistor power circuit with preventive diode bridge. 4,209,711, Cl. 307-104.000.

Baldeck, Charles M., to Industrial Hygiene Specialties. Gas sampler/collector for a mixture of gasses. 4,208,912, Cl. 73-421.50R.

Baldwin, Bernard A., to Phillips Petroleum Company. Lubricants. 4,209,410, Cl. 252-48.200.

Baltensperger, Rudolf; and Pfister, Hans B. Suspended rail structure especially for monorail vehicles. 4,208,969, Cl. 104-111.000.

Balters, Helmut, to Varta Batterie Aktiengesellschaft. Galvanic cell with alkaline electrolyte. 4,209,578, Cl. 429-206.000.
Bambara, Mario; and Ravagnati, Aldo, to Societa Italiana Telecommunicazioni Siemens S.p.A. Interface unit facilitating data exchange between central processor memory and high-speed peripheral unit. 4,209,841, Cl. 364-200.000.
Banigan, Thomas F.; and Verbiscar, Anthony J., to Anver Bioscience Design, Inc. Detoxification of botanical foodstuffs. 4,209,539, Cl. 426-319:000.
Barabas, Eugene S.: *See—*
Suwala, David W.; and Barabas, Eugene S., 4,209,562, Cl. 428-271.000.
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, to Motorola, Inc. Computer-controlled irrigation system. 4,209,131, Cl. 239-68.000.
Barley, Thomas A.; and Rast, Gustaf J., to United States of America, Army. Near carrier AM-FM calibration technique. 4,209,786, Cl. 343-17.700.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,209,207, Cl. 308-9.000.
Barnes, Robert R. Non-fouling container for lures with fish hooks. 4,208,825, Cl. 43-57.50R.
Barry Wright Corporation: *See—*
Peterson, Robert R., 4,208,889, Cl. 64-10.000.
Bartz, Richard O.: *See—*
Child, Francis W.; and Bartz, Richard O., 4,209,472, Cl. 261-23.00A.
BASF Aktiengesellschaft: *See—*
Fischer, Adolf, deceased, 4,209,317, Cl. 71-88.000.
Kincel, Roger S., 4,208,784, Cl. 29-596.000.
Wolf, Dieter; Diem, Hans; Grabowsky, Otto; and Matthias, Guenther, 4,209,466, Cl. 568-487.000.
BASF Wyandotte Corporation: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,415, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,416, Cl. 252-76.000.
BASK Aktiengesellschaft: *See—*
Jaedicke, Hagen; and Paust, Joachim, 4,209,450, Cl. 260-410.000.
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K. Aircraft take-off and landing system and method for using same. 4,209,768, Cl. 340-26.000.
Bassett, Alvin L. Combination table saw. 4,209,045, Cl. 144-1.00G.
Bastian Blessing Co. Inc.: *See—*
Arend, Raymond J.; and VerBerkmoes, John A., 4,208,972, Cl. 108-111.000.
Batchelar, Peter H., to Uniroyal, Inc. Method of making a notched transmission belt. 4,209,483, Cl. 264-159.000.
Bateman, John H., to Ciba-Geigy Corporation. Adducts containing epoxide groups, from hydantoin polyepoxide and binuclear hydantoin compounds. 4,209,608, Cl. 528-363.000.
Bathelt, Heinrich: *See—*
Schuierer, Erich; Bathelt, Heinrich; and Broll, Richard, 4,209,407, Cl. 252-3.000.
Bauer, Heinz: *See—*
Becker, Burckhard; Bauer, Heinz; and Gedig, Alfred, 4,209,159, Cl. 248-430.000.
Baugh, John E.; and Baugh, Patricia A. Chimney flue cleaning apparatus. 4,208,757, Cl. 15-249.000.
Baugh, Patricia A.: *See—*
Baugh, John E.; and Baugh, Patricia A., 4,208,757, Cl. 15-249.000.
Baumgarth, Manfred; Orth, Dieter; Radunz, Hans-Eckart; Lissner, Reinhard; and Maisenbacher, Jurgen, to Merck Patent Gesellschaft mit beschrankter Haftung. New prostaglandin-like diketals. 4,209,444, Cl. 260-338.000.
Baumgartl, Ulrich: *See—*
Muller, Bruno; Baumgartl, Ulrich; and Kohler, Werner, 4,209,743, Cl. 324-96.000.
Baur, George W.; and McKee, Ross, to Hughes Tool Company. Rock bit assembly method. 4,209,124, Cl. 228-182.000.
Baxter Travenol Laboratories, Inc.: *See—*
Alexander, John B.; Dennehey, T. Michael; and Goldhaber, Richard P., 4,209,013, Cl. 128-213.00A.
Soodak, Charles; and Priarone, Paul, 4,209,176, Cl. 277-95.000.
Bayer Aktiengesellschaft: *See—*
Stephan, Gunter; Birmes, Hartmut; Haus, Artur; and Plaza, Erwin, 4,209,297, Cl. 8-467.000.
Baynes, Gene P., to General Motors Corporation. Hydraulic power brake booster. 4,208,950, Cl. 91-369.00B.
BBC Brown Boveri & Company Limited: *See—*
Koppl, Georg; Pedrini, Giovanni; and Widmer, Hans, 4,209,679, Cl. 200-148.00A.
Snedkerud, Ole, 4,209,789, Cl. 343-765.000.
BBJ Laboratories: *See—*
Betton, Arnold L., 4,209,709, Cl. 307-10.0AT.
Bear Body, Inc.: *See—*
Sandos, Michael S., 4,209,048, Cl. 150-38.000.
Beatrice Foods Co.: *See—*
Jones, John H.; and Hipko, Patrick, 4,208,819, Cl. 40-310.000.
Shah, Syed M. M.; and Luksas, Anthony J., 4,209,503, Cl. 424-49.000.
Williams, Wilmore, 4,209,535, Cl. 426-46.000.
Zavagli, Steven B.; and Kasik, Robert L., 4,209,544, Cl. 426-580.000.
Beck, Wolfgang; Herzog, Horst; and Stipsits, Gunter, to Kraftwerk Union Aktiengesellschaft. Method of monitoring equipment and system for carrying out the method. 4,209,779, Cl. 340-683.000.
Becker, Arnold, to Louis Schweizer GmbH & Co. KG, Lederfabrik. Sammier press. 4,208,892, Cl. 69-48.000.
Becker, Burckhard; Bauer, Heinz; and Gedig, Alfred, to C. Rob. Hammerstein GmbH. Lockable guide assembly for adjustable vehicle seats. 4,209,159, Cl. 248-430.000.
Becker, Dieter: *See—*
Harth, Helmut; and Becker, Dieter, 4,209,504, Cl. 424-49.000.
Becker, Friedbert; Kloeber, Peter; and Steinkamp, Johann A., to Siemens Aktiengesellschaft. Railway communication system. 4,209,749, Cl. 455-56.000.
Becker, Michael, to Siemens Aktiengesellschaft. Circuit for compensating harmonic currents in an electric consumer arrangement. 4,209,757, Cl. 333-17.00R.
Beckman Instruments, Inc.: *See—*
Brown, James R., 4,209,837, Cl. 364-117.000.
Bederman, Seymour, to International Business Machines Corporation. Shared synchronous memory multiprocessing arrangement. 4,209,839, Cl. 364-200.000.
Bell, David W.; and Sinram, Edward W., to NCR Corporation. Ribbon cassette for oblique ribbon feeding. 4,209,261, Cl. 400-196.100.
Bell & Howell Company: *See—*
Stites, David G.; Flint, John R.; and Kreuser, Michael L., 4,209,238, Cl. 353-85.000.
Bell Telephone Laboratories, Incorporated: *See—*
Knowlton, Kenneth C., 4,209,842, Cl. 364-718.000.
Rentzepis, Peter M., 4,209,690, Cl. 455-611.000.
Bender, Herman G.; and Dikeman, James E., to Tektronix, Inc. Modular probe system. 4,209,742, Cl. 324-72.500.
Bendiberica, S.A.: *See—*
Bacardit, Juan S., 4,208,951, Cl. 91-422.000.
Bendix Corporation, The: *See—*
Ditlinger, Richard J., 4,208,952, Cl. 92-13.000.
Reddy, Junuthula N., 4,208,991, Cl. 123-32.0EG.
Bendler, Robert K., to Acurex Corporation. Apparatus for converting a DC or analog signal to a digital signal with minimum drift. 4,209,774, Cl. 340-347.0CC.
Bennett, Moreland P.: *See—*
Cacalloro, Philip A.; McCloy, Albert J.; and Bennett, Moreland P., 4,209,064, Cl. 165-130.000.
Berardi, James A.; Chelcun, Darrell; Dressel, Lawrence J.; and Westphal, Bruce D., to Honeywell Inc. Data processing protocol system. 4,209,840, Cl. 364-200.000.
Beretta, Giacomo, to Sgs-Ates Componenti Elettronici S.p.A. Module for integrated circuits. 4,209,798, Cl. 357-70.000.
Berezhnoi, Igor A.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.
Berger, David A.; and Welch, John W., to International Business Machines Corporation. File qualifying and sorting system. 4,209,845, Cl. 364-900.000.
Bergmann, Erik: *See—*
Salmela, Jouko; Bergmann, Erik; and Heikkila, Tauno, 4,209,362, Cl. 162-264.000.
Berkhoel, James L., to Donaldson Company, Inc. Filter element mounting mechanism. 4,209,310, Cl. 55-273.000.
Berlenbach, Norbert; and Klegraf, Ferdinand, to Passavant-Werke Michelbacher Huette. Process for slow softening water. 4,209,395, Cl. 210-46.000.
Bernardi, Richard B.: *See—*
Thomenius, Kai E.; and Bernardi, Richard B., 4,208,916, Cl. 73-626.000.
Berndt, Stephen R. Level indicating device for wall-mounted pictures. 4,208,802, Cl. 33-347.000.
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., to E. R. Squibb & Sons, Inc. Vitamin B_{12} derivative suitable for radiolabeling. 4,209,614, Cl. 536-25.000.
Berry, Helen K., to Children's Hospital Medical Center. Method for treating phenylketonuria. 4,209,531, Cl. 424-319.000.
Berthold, Werner; Botta, Artur; von Konig, Anita; and Rasp, Christian, to AGFA-Gevaert, A.G. Corrosion preventative for two-bath stabilizer baths. 4,209,583, Cl. 430-418.000.
Bertorello, Mario, to Rotomors S.p.A. Self-centering work holding and positioning fixture for machine tools. 4,209,180, Cl. 279-4.000.
Bertotti, Giorgio: *See—*
Franco, Luigi; and Bertotti, Giorgio, 4,209,076, Cl. 181-272.000.
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., to Phillips Petroleum Company. Antimony tris(dihydrocarbyl phosphite) and preparation thereof. 4,209,453, Cl. 260-446.000.
Bessett, Richard A.; Epstein, James; and Goebel, Franz, to GTE Laboratories Incorporated. Primary electrochemical cell. 4,209,571, Cl. 429-7.000.
Bethge, Dietrich: *See—*
Bethge, Walther; and Bethge, Dietrich, 4,209,687, Cl. 219-522.000.
Bethge, Walther; and Bethge, Dietrich, to Therglas GmbH fur Flachenheizung. Laminated transparent pane. 4,209,687, Cl. 219-522.000.
Bethlehem Steel Corporation: *See—*
Lynn, John D.; and Carrick, Gerald N., 4,209,313, Cl. 65-19.000.
Better-Way Products Company: *See—*
Starks, Emmett A., 4,208,841, Cl. 49-449.000.
Betterley, James E., to Globe Ticket Company. Self-wicketing ticket. 4,209,189, Cl. 283-18.000.

Betton, Arnold L., to BBJ Laboratories. Anti-theft ignition system. 4,209,709, Cl. 307-10.0AT.

Betts, Joseph E.; and Holub, Fred F., to General Electric Company. Method of improving the electrical properties of polymeric insulations containing polar additives, and the improved polymeric insulation product thereof. 4,209,566, Cl. 428-389.000.

Betts, Robert E., to United States of America, Army. Squib design. 4,208,967, Cl. 102-28.0EB.

Bhatia, Shyam: *See—*
Rao, G. R. Mohan; Stanczak, John S.; Lien, Jih-Chang; and Bhatia, Shyam, 4,208,781, Cl. 29-577.00C.

Bies, Sylvester W.: *See—*
Brown, Martin M.; and Bies, Sylvester W., 4,208,803, Cl. 33-348.000.

Billenstein, Siegfried; and Ehrl, Winfried, to Hoechst Aktiengesellschaft. Fluorine-containing alkyl-sulfato-betaines and processes for their manufacture. 4,209,456, Cl. 260-458.00F.

Biller, Dieter, to Repa Feinstanzwerk GmbH. Lock for safety belts in motor vehicles. 4,208,771, Cl. 24-230.0AL.

Billingsley, Lloyd E., to HydroTech International, Inc. Pipe connector apparatus and method. 4,209,270, Cl. 405-195.000.

Birmes, Hartmut: *See—*
Stephan, Gunter; Birmes, Hartmut; Haus, Artur; and Plaza, Erwin, 4,209,297, Cl. 8-467.000.

Bittner, Edward D., to Cascade Corporation. Lift truck load clamp having nonresilient contact pad surfaces textured for directionally variable resistance to slippage. 4,209,280, Cl. 414-620.000.

Black, William R., Sr.; and Sams, Gerald L., to Neely, Alvis. Window guard having boxed release. 4,208,837, Cl. 49-56.000.

Blair, Oather. Mortar sighting device. 4,208,801, Cl. 33-235.000.

Blazevic, Milos. Device for automatically recording, reproducing and translating, and corresponding circuit. 4,209,811, Cl. 360-78.000.

Blendax-Werke R. Schneider GmbH & Co.: *See—*
Harth, Helmut; and Becker, Dieter, 4,209,504, Cl. 424-49.000.

Blessum, Norman S.: *See—*
Ragle, Herbert U.; and Blessum, Norman S., 4,209,810, Cl. 360-77.000.

Bliemeister, Robert M., to Allis-Chalmers Corporation. Articulated seal for rotating cylinder such as kiln or the like. 4,209,175, Cl. 277-84.000.

Blodgett, Gerry A. Sorption system. 4,209,308, Cl. 55-179.000.

Blodgett, Norman S.: *See—*
Brownly, Richard C., 4,208,812, Cl. 37-41.000.

Blomqvist, Leif; and Goransson, to Aktiebolaget SKF. Self-aligning two row thrust roller bearing. 4,209,210, Cl. 308-234.000.

Bloom, Stanley M.; and Levy, Boris, to Polaroid Corporation. Method for forming clusters of noble metal silver precipitating nuclei. 4,209,330, Cl. 430-212.000.

Bluestein, Barry I.; and Lepp, Cyrus A., to Corning Glass Works. Alkaline agarosse gel electrophoresis of hemoglobins. 4,209,372, Cl. 204-180.00G.

Bluestein, Barry I.; Lepp, Cyrus A.; and Mason, Robert D., to Corning Glass Works. Acidic agar gel electrochromatography of hemoglobins. 4,209,373, Cl. 204-180.00G.

Bly, Ray E., to R. A. Pearson Company. Bottle tray. 4,209,094, Cl. 206-427.000.

Bocharov, Jury A.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakherova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.

Boeing Commercial Airplane Company: *See—*
Boilsen, Kenneth R., 4,208,949, Cl. 89-1.801.
Morris, John P.; and Podenski, Patrick A., 4,209,149, Cl. 244-53.00B.

Boeing Company, The: *See—*
Stephan, Leonard P., 4,209,152, Cl. 244-182.000.

Bofors America, Inc.: *See—*
Spoor, Martin, 4,208,905, Cl. 73-141.00A.

Boilsen, Kenneth R., to Boeing Commercial Airplane Company. Missile carrier airplane. 4,208,949, Cl. 89-1.801.

Boise Cascade Corporation: *See—*
Elias, Thomas C., 4,209,126, Cl. 229-43.000.

Bollman, Hellmuth; and Heimrath, Ernst, to Braun Aktiengesellschaft. Automatic filter-type coffee maker. 4,208,957, Cl. 99-282.000.

Bonaga, Maria L.: *See—*
Gandolfi, Maria L.; and Bonaga, Maria L., 4,209,291, Cl. 431-16.000.

Bonner, Alvin T., Sr., to John D. Hollingsworth on Wheels, Inc. Can coiler mechanism can changer. 4,208,768, Cl. 19-159.00A.

Boone, L. A. Blood drying method and apparatus. 4,208,808, Cl. 34-166.000.

Booth, Frederick C.; and Stephenson, Robert L., to Allied Chemical Corporation. Remote tension-relieving apparatus for safety belt retractor. 4,209,142, Cl. 242-107.600.

Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., to Allied Chemical Corporation. Recyclable boron trifluoride catalyst and method of using same. 4,209,654, Cl. 585-465.000.

Boots Company Limited, The: *See—*
Nicholson, John S.; and Tantum, James G., 4,209,638, Cl. 562-401.000.

Borg-Warner Corporation: *See—*
Maudlin, Wendell E., 4,208,886, Cl. 62-498.000.

Borrett, Ronald D.: *See—*
Zylstra, Henry J.; and Borrett, Ronald D., 4,209,818, Cl. 361-96.000.

Botta, Artur: *See—*
Berthold, Werner; Botta, Artur; von Konig, Anita; and Rasp, Christian, 4,209,583, Cl. 430-418.000.

Bouillon, Claude; and Rosenbaum, Georges, to L'Oreal. Aluminum tris-(N-oxypyridine-2-thiolate); cosmetic or pharmaceutical compositions containing the same and the use of said compositions. 4,209,506, Cl. 424-68.000.

Bowen, Jack L.; and Paulson, Gary F. Snap-on handle structure. 4,209,266, Cl. 403-329.000.

Brademeyer, David L.; and Parker, Donald L., to General Motors Corporation. Quick take-up master cylinder. 4,208,881, Cl. 60-578.000.

Brady, John W.; Eijsberg, Pieter; and Logemann, Johan D., to Synres International B.V. Continuous mass preparation of polymers. 4,209,599, Cl. 526-64.000.

Brandeberry, Raymond L.; Ginther, Lawrence B.; Lehr, Glen J.; and Sanford, Paul F., to Libbey-Owens-Ford Company. Method of processing glazed tubular inserts. 4,209,556, Cl. 427-330.000.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, 4,209,208, Cl. 308-20.000.

Brandestini, Marco: *See—*
Muhlemann, Hans R.; Steiner, Ernesto; and Brandestini, Marco, 4,208,795, Cl. 433-203.000.

Brandman, Yigal: *See—*
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, 4,209,131, Cl. 239-68.000.

Brandt, Maurice W.: *See—*
Fogg, Daniel A.; Brandt, Maurice W.; and Klemundt, Marshall, 4,209,802, Cl. 358-106.000.

Branscheid, Werner: *See—*
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,209,207, Cl. 308-9.000.

Branscombe, Richard A.: *See—*
Lloyd, Harold L.; Branscombe, Richard A.; and Oliver, Robert C., 4,209,585, Cl. 435-30.000.

Brantingham, George L.; and Wiggins, Richard H., Jr., to Texas Instruments Incorporated. Lattice filter for waveform or speech synthesis circuits using digital logic. 4,209,844, Cl. 364-724.000.

Brantingham, George L.: *See—*
Wiggins, Richard H., Jr.; and Brantingham, George L., 4,209,836, Cl. 364-718.000.

Braun Aktiengesellschaft: *See—*
Bollman, Hellmuth; and Heimrath, Ernst, 4,208,957, Cl. 99-282.000.

Braun, Roland J.; and Carden, Gary R., to International Business Machines Corporation. Magnetic domain device shield. 4,209,848, Cl. 365-2.000.

Brearley, Malcolm, to Girling Limited. Anti-skid brake control system. 4,209,203, Cl. 303-110.000.

Bremholt, Sven A. T., to AB Gustavsberg. Process for extruding and cross-linking olefin polymers, diolefin polymers, and copolymers of olefins and diolefins and copolymerizable monomers. 4,209,597, Cl. 525-376.000.

Breno, Philip J., to Owens-Illinois, Inc. Fluid collection apparatus. 4,209,488, Cl. 422-101.000.

Bridges, William B., to United States of America, Navy. Getter pump for hydrogen maser. 4,209,752, Cl. 330-4.000.

Bridgestone Tire Company Limited: *See—*
Yoshida, Shoji; and Harakon, Katsuyuki, 4,209,050, Cl. 152-354.00R.

Bristol-Myers Company: *See—*
Juby, Peter F., 4,209,620, Cl. 544-252.000.
Juby, Peter F., 4,209,623, Cl. 544-319.000.

British Gas Corporation: *See—*
Conway, Henry L.; Hargis, John A.; and Stroud, Henry J. F., 4,209,305, Cl. 48-213.000.

Brockway, Charles E. Locking device for blade of rotary lawn mower. 4,208,859, Cl. 56-255.000.

Broken Hill Proprietary Company Limited, The: *See—*
Nicol, Stuart K.; and Swanson, Andrew R., 4,209,301, Cl. 44-24.000.

Broll, Richard: *See—*
Schuierer, Erich; Bathelt, Heinrich; and Broll, Richard, 4,209,407, Cl. 252-3.000.

Brooks, Clyde S.: *See—*
Lemkey, Franklin D.; Douglas, Frank C.; Golden, Gerald S.; and Brooks, Clyde S., 4,209,008, Cl. 126-452.000.

Brooks, Ray G., to Convey, Inc. Socket insertion guide. 4,209,216, Cl. 339-65.000.

Brothers, Alvin O. Tool for use in constructing paneled ornaments. 4,209,164, Cl. 269-37.000.

Brown, Barry: *See—*
Jones, Brian G.; and Brown, Barry, 4,209,183, Cl. 280-79.300.

Brown, Galen K.: *See—*
Tennes, Bernard R.; and Brown, Galen K., 4,208,861, Cl. 56-328.0TS.

Brown, Gaylord, to Sweetheart Plastic, Inc. Tamper-proof closure and method of making same. 4,209,101, Cl. 215-253.000.

Brown, Harry W., to Eaton Corporation. Precision snap switch with improved one piece contact support and terminal member. 4,209,677, Cl. 200-67.00D.

Brown, James R., to Beckman Instruments, Inc. Programmable controller. 4,209,837, Cl. 364-117.000.

Brown, Jay: *See*—
Puri, Ajay K.; Caruso, Michael J.; Dennison, Stanley M.; and Brown, Jay, 4,209,781, Cl. 340-347.0DA.
Brown, Martin M.; and Bies, Sylvester W., to Stanley Works, The. Top viewable vial level. 4,208,803, Cl. 33-348.000.
Brownly, Richard C., to Blodgett, Norman S. Snow plow attachment. 4,208,812, Cl. 37-41.000.
Brugger, Robert, to Langbein-Pfanhauser Werke AG. Baking form and method of making same. 4,209,569, Cl. 428-472.000.
Brunner, Anton. Drive for operating a punching tool. 4,208,924, Cl. 74-47.000.
Brunswick Corporation: *See*—
Panzera, Carlino, 4,209,334, Cl. 106-54.000.
Bryant, Charles H. Fish lure. 4,208,822, Cl. 43-42.020.
Bryer, Philip S., to PerSci, Inc. Dual magnetic head mounting and loading. 4,209,813, Cl. 360-105.000.
Buan, Angeles V., to Goodyear Tire & Rubber Company, The. Hose. 4,209,042, Cl. 138-126.000.
Buckley, Walter S. Container for symbolically indicating pharmaceutical prescription. 4,208,983, Cl. 116-205.000.
Budd Company, The: *See*—
Lancaster, Arthur, 4,208,996, Cl. 123-122.00E.
Budzich, Tadeusz. Load responsive control valve. 4,209,039, Cl. 137-596.130.
Buffington, Robert B.: *See*—
Hopper, Everett S.; and Buffington, Robert B., 4,208,903, Cl. 73-52.000.
Buhler, Eugen. Proceeding and apparatus for cooling, drying and separating castings and foundry sand in a cooling device. 4,209,055, Cl. 164-4.000.
Bunker Ramo Corporation: *See*—
Sumner, Murray; and Liaukau, Sigitas J., 4,209,784, Cl. 340-711.000.
Burk, George A.: *See*—
Mixan, Craig E.; and Burk, George A., 4,209,522, Cl. 424-270.000.
Burkdoll, Frank B., to Explosive Technology, Inc. Pyrotechnic light source. 4,209,823, Cl. 362-84.000.
Burns, Carmen D., to National Semiconductor Corporation. Manufacture of bumped composite tape for automatic gang bonding of semiconductor devices. 4,209,355, Cl. 156-630.000.
Burrascano, Roberto: *See*—
Busacca, Guido; Burrascano, Roberto; Meli, Vicenzo; and Migliaccio, Salvatore, 4,209,755, Cl. 331-83.000.
Burroughs Corporation: *See*—
Alper, Daniel D., 4,209,139, Cl. 242-67.30R.
Ragle, Herbert U.; and Blessum, Norman S., 4,209,810, Cl. 360-77.000.
Burroughs Wellcome Co.: *See*—
Torode, Allan J.; Harden, David; and Spence, John, 4,209,513, Cl. 424-228.000.
Busacca, Guido; Burrascano, Roberto; Meli, Vicenzo; and Migliaccio, Salvatore, to Societa Italiana Telecomunicazioni Siemens S.p.A. Tunable oscillator comprising dual-cavity klystron. 4,209,755, Cl. 331-83.000.
Butcher, Barry T., to Loblaws Limited. Display device. 4,208,818, Cl. 40-16.200.
Butenschon, Claus: *See*—
Schierz, Winfried; and Butenschon, Claus, 4,209,799, Cl. 357-81.000.
Butternut Electronics Co.: *See*—
Newcomb, Donald R., 4,209,790, Cl. 343-830.000.
Byers, Dwight R. Self-locking trailer hitch assembly. 4,209,184, Cl. 280-511.000.
Byram, Robert J., to General Motors Corporation. Air switch for low tire pressure indication. 4,208,982, Cl. 116-34.00R.
Byron, Michael N. Game utilizing a game implement. 4,209,171, Cl. 273-161.000.
C. Rob. Hammerstein GmbH: *See*—
Becker, Burckhard; Bauer, Heinz; and Gedig, Alfred, 4,209,159, Cl. 248-430.000.
Cabane, Bruno; and Vergnault, Joel, to Produits Chimiques Ugine Kuhlmann. Process for biological denitrification of effluents. 4,209,390, Cl. 210-12.000.
Cacalloro, Philip A.; McCloy, Albert J.; and Bennett, Moreland P., to General Electric Company. Panel-type radiator for electrical apparatus. 4,209,064, Cl. 165-130.000.
Cain, Edwin F. C.: *See*—
Wooten, John R.; Carpenter, Harry W.; and Cain, Edwin F. C., 4,209,478, Cl. 264-65.000.
Caldecourt, Victor J.: *See*—
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,208,907, Cl. 73-190.00R.
California Institute of Technology: *See*—
Kalvinskas, John J.; Mueller, William A.; and Ingham, John D., 4,209,393, Cl. 210-40.000.
Sutherland, Ivan E.; and Seitz, Charles L., 4,209,240, Cl. 354-4.000.
Calor Group Limited, The: *See*—
Kent, Peter J. C.; and Page, John K. R., 4,209,413, Cl. 252-70.000.
Calpis Food Industry Co., Ltd., The: *See*—
Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, 4,209,508, Cl. 424-117.000.
Camelia Manufacturing Co. Ltd.: *See*—
Peck, Christopher M.; and Gozna, Eric R., 4,209,011, Cl. 128-87.00R.
Campbell Soup Company: *See*—
Clatfelter, Kenneth; LoPresti, George M.; Conte, Joseph A.; and deLumen, Benito O., 4,209,541, Cl. 426-430.000.
Campbell, Willis R.: *See*—
Waldrop, T. William; and Campbell, Willis R., 4,208,862, Cl. 56-341.000.
Canadian Patents and Development Limited: *See*—
Sefton, Michael V., 4,209,014, Cl. 128-214.00F.
Candor, James T. Electrostatic method and apparatus for treating material. 4,208,807, Cl. 34-1.000.
Candy, James O., Sr. Lid opener for storage container. 4,208,839, Cl. 49-344.000.
Cannon, Thomas M.: *See*—
Fenimore, Edward E.; and Cannon, Thomas M., 4,209,780, Cl. 340-146.30F.
Canon Kabushiki Kaisha: *See*—
Minoura, Kazuo, 4,209,223, Cl. 350-6.100.
Tazaki, Shigemitsu; Yamataka, Akihiro; Souma, Tsunenori; and Kusumoto, Tadao, 4,209,850, Cl. 365-189.000.
Carabateas, Philip M.: *See*—
Diana, Guy D.; and Carabateas, Philip M., 4,209,526, Cl. 424-273.00P.
Carberg, William G.: *See*—
Lopes, William F.; and Carberg, William G., 4,208,882, Cl. 60-653.000.
Carden, Gary R.: *See*—
Braun, Roland J.; and Carden, Gary R., 4,209,848, Cl. 365-2.000.
Carkhuff, Edwin D., to Pharmacare, Inc. Blister container having a reclosable lid assembly. 4,209,096, Cl. 206-621.000.
Carl Hasse & Wrede GmbH: *See*—
Conseur, Joachim; and Hoch, Manfred, 4,208,928, Cl. 74-574.000.
Carlson, Robert M., to University of California, The Regents of the. Method and apparatus for determination of volatile electrolytes. 4,209,299, Cl. 23-230.00R.
Carolus, David T.; Edwards, Ralph W.; and Morrin, Paul C., to General Motors Corporation. Antenna cable drive and storage drum with stop mechanism. 4,209,792, Cl. 343-903.000.
Carpenter, Harry W.: *See*—
Wooten, John R.; Carpenter, Harry W.; and Cain, Edwin F. C., 4,209,478, Cl. 264-65.000.
Carpenter, L. Graydon; Kinosz, Donald L.; and Cedro, Vito, III, to Aluminum Company of America. Treatment of offgas from aluminum chloride production. 4,209,496, Cl. 423-210.000.
Carrick, Gerald N.: *See*—
Lynn, John D.; and Carrick, Gerald N., 4,209,313, Cl. 65-19.000.
Caruso, Michael J.: *See*—
Puri, Ajay K.; Caruso, Michael J.; Dennison, Stanley M.; and Brown, Jay, 4,209,781, Cl. 340-347.0DA.
Cascade Corporation: *See*—
Bittner, Edward D., 4,209,280, Cl. 414-620.000.
Caterpillar Tractor Co.: *See*—
Field, Jesse L., Jr., 4,208,874, Cl. 60-420.000.
Gregg, Anton T.; and Murphy, Robert E., 4,209,205, Cl. 305-14.000.
Hanson, Edwin E., 4,208,926, Cl. 74-191.000.
Merkel, Russell D., 4,208,817, Cl. 37-141.00T.
Miller, Robert G.; and Render, Michael L., 4,208,925, Cl. 74-866.000.
York, Lyle E., 4,209,074, Cl. 180-78.000.
Cato Research Corporation: *See*—
Kruesi, Paul R., 4,209,501, Cl. 423-491.000.
Cecchi, Aristide, to RJM Manufacturing, Inc. Tape winding apparatus. 4,209,138, Cl. 242-56.900.
Cedro, Vito, III: *See*—
Carpenter, L. Graydon; Kinosz, Donald L.; and Cedro, Vito, III, 4,209,496, Cl. 423-210.000.
Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie: *See*—
Leroy, Vincent M.; and Richelmi, Joseph H., 4,209,366, Cl. 204-27.000.
Centro Ricerche Fiat S.p.A.: *See*—
Franco, Luigi; and Bertotti, Giorgio, 4,209,076, Cl. 181-272.000.
Cerim S.p.A.: *See*—
Pedretti, Gaetano, 4,208,751, Cl. 12-10.000.
Cermak, Michael J.: *See*—
Merchant, Stanley R.; and Cermak, Michael J., 4,208,786, Cl. 29-612.000.
CGR Ultrasonic: *See*—
Dory, Jacques, 4,209,022, Cl. 128-660.000.
Chaix, Jean-Edmond; and Fajeau, Maurice, to Commissariat a l'Energie Atomique. Steam generator. 4,208,987, Cl. 122-32.000.
Champion International Corporation: *See*—
Cottrell, Edward D., 4,209,112, Cl. 221-93.000.
Dutcher, Daniel P., 4,209,095, Cl. 206-469.000.
Chandavoine, Marie-Madeleine: *See*—
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet Fillain, Paul, 4,209,439, Cl. 260-45.80N.
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet de Fillain, Paul, 4,209,440, Cl. 260-45.80N.
Chang, Henry K.; and Hausen, Wolfgang H., to International Business Machines Corporation. Apparatus and method for record reorientation following error detection in a data storage subsystem. 4,209,809, Cl. 360-53.000.
Chao, Hung-Ya; and Maalouf, George E., to Moore Business Forms, Inc. Microcapsules, method of making same, and carbonless copying system including said microcapsules. 4,209,188, Cl. 282-27.500.

Charles, Joseph T.; and Ryan, James P., to Coil Sales & Manufacturing Company. Method and apparatus for testing the tip-ring polarity of telephone receptacles connected in parallel to a non-working pair. 4,209,671, Cl. 179-175.000.

Chase, William L., to International Drum Corporation. Method for using container and lid. 4,208,954, Cl. 93-36.00M.

Chatterji, Debajyoti; and Park, Dong-Sil, to General Electric Company. Sulfur electrode container and methods of manufacture. 4,209,573, Cl. 429-104.000.

Chattha, Mohinder S., to Ford Motor Company. Coating compositions including hydroxy functional acrylic organophosphate reactive catalyst. 4,209,595, Cl. 525-161.000.

Chelcun, Darrell: *See*—
Berardi, James A.; Chelcun, Darrell; Dressel, Lawrence J.; and Westphal, Bruce D., 4,209,840, Cl. 364-200.000.

Chernin, Semen M. Multiple reflection optical system. 4,209,232, Cl. 350-294.000.

Chevron Research Company: *See*—
MacFadden, Donald L., 4,209,590, Cl. 435-244.000.

Chicago Bridge & Iron Company: *See*—
McCabe, John S.; Stafford, Donald C.; and Laverman, Royce J., 4,209,271, Cl. 405-210.000.

Chikama, Toshio, to Machida Endoscope Co., Ltd. Pressure-light endoscope. 4,209,228, Cl. 350-96.260.

Child, Francis W.; and Bartz, Richard O., to Child Laboratories Inc. Fuel supply system. 4,209,472, Cl. 261-23.00A.

Child Laboratories Inc.: *See*—
Child, Francis W.; and Bartz, Richard O., 4,209,472, Cl. 261-23.00A.

Children's Hospital Medical Center: *See*—
Berry, Helen K., 4,209,531, Cl. 424-319.000.

Chinoin Gygyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Hermecz, Istvan; Vasvari, Lelle; and Horvath, Agnes, 4,209,622, Cl. 544-282.000.

Choma, Michael A.: *See*—
Simko, Aladar O.; Choma, Michael A.; and Schechter, Michael M., 4,208,995, Cl. 123-119.00A.

Christ, Alfred, to Escher Wyss Limited. Centrifuge. 4,209,405, Cl. 210-376.000.

Chromalloy American Corporation: *See*—
Eglinton, Robert B., 4,208,790, Cl. 29-798.000.

Chronerberry, Jack E. System for producing warning signals perceivable by an automobile driver in response to remote warning sounds. 4,209,769, Cl. 340-34.000.

Chrysler Corporation: *See*—
Gilham, Arthur W. S.; and Flockencier, Stuart W., 4,209,832, Cl. 364-521.000.
Hall, John F., 4,209,177, Cl. 277-101.000.

Chupak, John M.; Gladd, Joseph H.; and McNamee, James W., to General Motors Corporation. Two-piece socket terminal. 4,209,221, Cl. 339-223.00S.

Chwastiak, Stephen, to Union Carbide Corporation. Low molecular weight mesophase pitch. 4,209,500, Cl. 423-447.600.

Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, to SNIA VISCOSA Societa Nazionale Industrial Applicazioni Viscosa S.p.A. Self-extinguishing and thermostable copolyesters and process for making the same. 4,209,606, Cl. 528-167.000.

Ciba-Geigy AG: *See*—
Thies, Hans; and von Kaenel, Fred, 4,209,469, Cl. 568-68.000.

Ciba-Geigy Corporation: *See*—
Bateman, John H., 4,209,608, Cl. 528-363.000.
Dube, James H.; and Miller, Ralph, 4,209,471, Cl. 260-990.000.
Gruenfeld, Norbert, 4,209,514, Cl. 424-244.000.
Heckendorn, Roland; and Meier, Rene, 4,209,515, Cl. 424-248.530.
Heckendorn, Roland; and Meier, Rene, 4,209,516, Cl. 424-248.540.
Pissiotas, Georg; Duerr, Dieter; and Rohr, Otto, 4,209,319, Cl. 71-121.000.

Citizen Watch Co., Ltd.: *See*—
Ebihara, Heihachiro, 4,208,866, Cl. 368-251.000.
Hanaoka, Tadashi, 4,208,869, Cl. 368-84.000.

Clairol Incorporated: *See*—
Walter, Henry J.; and Kunz, Raymond W., 4,209,685, Cl. 219-225.000.

Clarion Co., Ltd.: *See*—
Umezawa, Hiroyuki; and Okada, Hitoshi, 4,209,812, Cl. 360-96.300.

Clark, Gary A.; and Queener, Carl A., to International Business Machines Corporation. Method and apparatus for generating duplex copies electrophotographically from simplex originals. 4,209,249, Cl. 355-14.00R.

Clark, John R.; and Fisch, Michael H., to Witco Chemical Corporation. Alkyl-substituted hydroquinone carbonate esters as stabilizers for olefin polymers. 4,209,431, Cl. 260-23.00H.

Clash, David G., to Union Carbide Corporation. Alkaline-MnO_2 cell having a zinc powder-gel anode containing methyl cellulose. 4,209,577, Cl. 429-206.000.

Clatfelter, Kenneth; LoPresti, George M.; Conte, Joseph A.; and deLumen, Benito O., to Campbell Soup Company. Production of bland, functional, defatted soy flour. 4,209,541, Cl. 426-430.000.

Clausing, Challiss I., to Gould Inc. Compact racking mechanism for circuit breaker. 4,209,676, Cl. 200-50.0AA.

Clem, Arthur G., to American Colloid Company. Bentonite-gelled oil waterproofing composition. 4,209,568, Cl. 428-454.000.

Clerbois, Lucien: *See*—
Tytgat, Daniel; Noel, Stephane; and Clerbois, Lucien, 4,209,600, Cl. 526-74.000.

Close, Albert R., to American Safety Equipment Corporation. Lock-up inhibitor for door mounted retractor. 4,209,186, Cl. 280-803.000.

Closet Systems Corp.: *See*—
Kashden, R. Paul, 4,209,156, Cl. 248-289.00R.

Cloup, Jean-Paul: *See*—
Ducrot, Pol B. L.; and Cloup, Jean-Paul, 4,209,720, Cl. 310-45.000.

Co.M.E.T. Compagnie de Materiel et d'Equipements Techniques: *See*—
Moryl, Richard, 4,208,944, Cl. 85-71.000.

Coal Industry (Patents) Limited: *See*—
Oven, Terence; Nicholls, John T.; and Higgs, Robert H., 4,209,199, Cl. 299-43.000.

Cobb, Bernie J., to United States of America, Army. High efficiency propulsion system. 4,208,948, Cl. 89-1.706.

Coby, August D.; and Cooley, Wils L., to United States of America, Interior. Apparatus for the continuous monitoring of ground bed resistance. 4,209,741, Cl. 324-62.000.

Coca-Cola Company, The: *See*—
Hopper, Everett S.; and Buffington, Robert B., 4,208,903, Cl. 73-52.000.

Coffee, Ronald A., to Imperial Chemical Industries Limited. Containers for use in the electrostatic spraying of liquids. 4,209,134, Cl. 239-690.000.

Coha, Thomas F.; Klinck, Michael P.; and Jaje, Thomas, to General Motors Corporation. Transmission ratio indicator assembly. 4,208,981, Cl. 116-28.100.

Cohen, Yitzhak: *See*—
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, 4,209,131, Cl. 239-68.000.

Coil Sales & Manufacturing Company: *See*—
Charles, Joseph T.; and Ryan, James P., 4,209,671, Cl. 179-175.000.

Coilcraft, Inc.: *See*—
Priegnitz, Robert A., 4,209,826, Cl. 363-21.000.

Coker, Thomas G.; and La Conti, Anthony B., to General Electric Company. Production of halogens by electrolysis of alkali metal halides in a cell having catalytic electrodes bonded to the surface of a porous membrane/separator. 4,209,368, Cl. 204-98.000.

Cole, Edwin L. Sign for disabled motorist. 4,208,820, Cl. 40-591.000.

Colgate-Palmolive Company: *See*—
Schaar, Charles H., 4,209,016, Cl. 128-287.000.

Collier, David L. Connector for knock-down cabinet. 4,208,850, Cl. 52-285.000.

Collins, David L., to Solargenics, Inc. Solar heating system, and control devices therefor. 4,209,007, Cl. 126-422.000.

Collins, Truman F., to Kraft, Inc. Method and apparatus for cutting blocks of bulk material. 4,208,931, Cl. 83-44.000.

Colombani, Bruno, to Industrie Pirelli S.p.A. Process and apparatus for making a combination bead wire and bead zone filler for a vehicle tire. 4,209,353, Cl. 156-136.000.

Colt Industries Operating Corp. (Pratt & Whitney Machine Tool Division): *See*—
Michaud, Orean E.; and Kindl, George F., 4,208,796, Cl. 33-143.00L.

Combustion Engineering, Inc.: *See*—
Jacobs, Martin; and Roccatagliata, Raul J., 4,208,988, Cl. 122-510.000.

Commissariat a l'Energie Atomique: *See*—
Chaix, Jean-Edmond; and Fajeau, Maurice, 4,208,987, Cl. 122-32.000.

Commonwealth Associates Inc.: *See*—
Stewart, Charles J., Jr., 4,208,797, Cl. 33-180.00R.

Commonwealth Scientific and Industrial Research: *See*—
Angliss, Ian B., 4,208,891, Cl. 68-19.000.

Compagnie Generale des Etablissements Michelin: *See*—
Vanotti, Gerard, 4,209,160, Cl. 249-162.000.

Compagnie Industrielle de Mecanismes: *See*—
Periou, Pierre, 4,209,724, Cl. 310-154.000.

Conseur, Joachim; and Hoch, Manfred, to Carl Hasse & Wrede GmbH. Torsional balancer device having viscous damping agent. 4,208,928, Cl. 74-574.000.

Constructions Mecaniques F. Laroche et Fils: *See*—
Morel, Andre, 4,208,769, Cl. 19-204.000.

Container Corporation of America: *See*—
Helms, Charles R., 4,209,125, Cl. 229-15.000.

Conte, Joseph A.: *See*—
Clatfelter, Kenneth; LoPresti, George M.; Conte, Joseph A.; and deLumen, Benito O., 4,209,541, Cl. 426-430.000.

Continental Group, Inc., The: *See*—
Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., 4,208,976, Cl. 113-121.00A.

Convey, Inc.: *See*—
Brooks, Ray G., 4,209,216, Cl. 339-65.000.

Conway, Henry L.; Hargis, John A.; and Stroud, Henry J. F., to British Gas Corporation. Process for making substitute natural gas. 4,209,305, Cl. 48-213.000.

Cook, Martin C.: *See*—
Gregson, Michael; Cook, Martin C.; and Gregory, Gordon I., 4,209,616, Cl. 544-28.000.

Cooley, Wils L.: *See*—
Coby, August D.; and Cooley, Wils L., 4,209,741, Cl. 324-62.000.

Cooper, Bob D.; Krivy, Richard L.; and Horinek, Herbert J., to Halliburton Company. Chassis having articulated frame. 4,209,278, Cl. 414-477.000.

Cooper Industries, Inc.: *See*—
Sheldon, Gordon P., 4,209,182, Cl. 279-75.000.

Cooper Laboratories, Inc.: *See*—
Wohl, Ronald A., 4,209,624, Cl. 544-400.000.
Cooper, Stephen M.; Webster, Thomas H.; and Jaunich, Helmut, to Foseco International Limited. Desulphuration of metals. 4,209,325, Cl. 75-58.000.
Cordis Dow Corp.: *See*—
Lipps, Bennie J.; and Landau, Julian I., 4,209,391, Cl. 210-22.00A.
Corinaldi, Giorgio; and Shirinian, Jack, to Lejon of California, Inc. Belt buckle. 4,209,117, Cl. 224-224.000.
Corning Glass Works: *See*—
Bluestein, Barry I.; and Lepp, Cyrus A., 4,209,372, Cl. 204-180.00G.
Bluestein, Barry I.; Lepp, Cyrus A.; and Mason, Robert D., 4,209,373, Cl. 204-180.00G.
Hausheer, Lawrence B., 4,209,727, Cl. 313-404.000.
Rittler, Hermann L., 4,209,229, Cl. 350-96.340.
Spurling, J. Jeffrey, 4,209,315, Cl. 65-145.000.
Corriveau, Renee D. Constructible animal doll. 4,208,832, Cl. 46-22.000.
Corsentino, Joseph L. Track closing attachment for a mobile ground irrigation tower. 4,209,068, Cl. 172-572.000.
Cory Food Services, Inc.: *See*—
Petry, Stanton H., 4,208,958, Cl. 99-300.000.
Cosgrove, William J.: *See*—
Dischert, Robert A.; and Cosgrove, William J., 4,209,801, Cl. 358-37.000.
Costanzo, Kathryn N., to Smith, D. V., a part interest. Animal deodorizing collar attachment. 4,208,986, Cl. 119-106.000.
Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Alkylated hydroquinone antioxidants. 4,209,648, Cl. 568-766.000.
Cottrell, Edward D., to Champion International Corporation. Stick feeding apparatus. 4,209,112, Cl. 221-93.000.
Couture, Paul A.: *See*—
Jentoft, Arthur P.; and Couture, Paul A., 4,208,840, Cl. 49-379.000.
Coyne, Brenton S., to Dow Chemical Company, The. Crosslinked chlorinated polyethylene foam. 4,209,473, Cl. 264-22.000.
Cramlet, Charles: *See*—
Gaura, Charles F.; Volkman, John C.; and Cramlet, Charles, 4,208,847, Cl. 52-118.000.
Crane Packing Co.: *See*—
Katzke, Ernest F.; and Lindquist, Dennis E., 4,208,842, Cl. 51-111.00R.
Creemers, Henricus M. J. C.; and Henskens, Hubertus J. G., to Stamicarbon, B.V. Process for the removal of non-converted monomers from a copolymer of acrylonitrile. 4,209,436, Cl. 260-29.7PT.
Crisci, Victor E. Container with vapor lock closure. 4,209,107, Cl. 220-306.000.
Crisp, Stephen: *See*—
Wilson, Alan D.; and Crisp, Stephen, 4,209,434, Cl. 260-29.60H.
Crounse, Nathan N.; and Schmidt, Paul J., to Sterling Drug Inc. Morpholinodiphenylphthalides. 4,209,618, Cl. 544-153.000.
Crout, Richard J.: *See*—
Gilbertson, John R.; and Crout, Richard J., 4,209,533, Cl. 424-343.000.
Crouzet: *See*—
Tremeau, Claude, 4,209,005, Cl. 125-13.00R.
Crucifix born Depheimer, Micheline: *See*—
Riveron, Andre M.; Astoin, Jacques N.; Marivain, Alain D.; Crucifix born Depheimer, Micheline; Lapotre, Martine M.; and Torrens born Le Gargean, Yvette M., 4,209,517, Cl. 424-248.570.
Cullender, Eric. Automatic disinfectant apparatus for telephone handset. 4,209,673, Cl. 179-185.000.
Cullom, Edward N. Clock-oriented visual reminder and method. 4,208,870, Cl. 368-41.00R.
Cunningham, Hugh: *See*—
Raetzsch, Carl W.; and Cunningham, Hugh, 4,209,380, Cl. 204-282.000.
Cuntze, Ulrich: *See*—
Ong, Sienling; and Cuntze, Ulrich, 4,209,333, Cl. 106-25.000.
Curl, Robert B.; and Foss, Fred. Tuber planter monitor. 4,209,109, Cl. 221-7.000.
Curtis, Alexander; Landsberg, Mark L.; and Meyers, Edwin J., to Omnion, Incorporated. Crossword puzzle game equipment. 4,209,173, Cl. 273-240.000.
Czumak, Frank M., to Polaroid Corporation. Film cassette processor having capillary grooves. 4,209,235, Cl. 352-78.00R.
Dahlgren, Harold P., to Dahlgren Manufacturing Company. Newspaper printing system. 4,208,963, Cl. 101-141.000.
Dahlgren Manufacturing Company: *See*—
Dahlgren, Harold P., 4,208,963, Cl. 101-141.000.
Daicel Ltd.: *See*—
Kojima, Hidetaka; Oda, Shingo; Yokoyama, Takushi; and Murakami, Yasukazu, 4,209,467, Cl. 260-340.700.
Yabune, Hideo; and Nambu, Masami, 4,209,340, Cl. 106-176.000.
Dal Pont, Jean-Pierre: *See*—
Gac, Robert; Dal Pont, Jean-Pierre; and Levet, Frederic, 4,209,646, Cl. 568-724.000.
Dall'Asta, Gino: *See*—
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,209,606, Cl. 528-167.000.
Dana Corporation: *See*—
Sharpe, Robert L., 4,208,845, Cl. 51-290.000.
Dancsi, Lajos: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.
Danilychev, Vladimir A.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.
Dankesreiter, Georg: *See*—
Manser, Josef; and Dankesreiter, Georg, 4,208,806, Cl. 34-1.000.
Darragh, Kirk V.: *See*—
Irani, Mazin R.; and Darragh, Kirk V., 4,209,497, Cl. 423-315.000.
Davegardh, Tore; Gellerstedt, Nils; and Sahlin, Folke, to Aktiebolaget Bofors. Method of and device for pressing pyrotechnical charges. 4,208,945, Cl. 86-20.00R.
Davignon, Paul A.: *See*—
Newcomb, Paul D.; Hopkins, Ethan C.; and Davignon, Paul A., 4,209,289, Cl. 425-410.000.
Davis, Abraham D.; and Pinter, Kenneth W., to A. B. Dick Company. Self-adhering stencil. 4,209,565, Cl. 428-347.000.
Davis, John P.: *See*—
Evans, David V.; Davis, John P.; and Shaw, Thomas L., 4,208,877, Cl. 60-495.000.
Day, John T., to Rubber Millers, Inc.; and Koppers Company, Inc. Composite feeder belt. 4,209,089, Cl. 198-847.000.
De, Amal K.: *See*—
Heimerl, Wilfried; Schiewer, Edwin; and De, Amal K., 4,209,421, Cl. 252-301.10W.
Dechant, Donald C.: *See*—
English, William J.; and Dechant, Donald C., 4,208,853, Cl. 53-389.000.
de Cointet de Fillain, Paul: *See*—
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet de Fillain, Paul, 4,209,440, Cl. 260-45.80N.
de Cointet Fillain, Paul: *See*—
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet Fillain, Paul, 4,209,439, Cl. 260-45.80N.
DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Chemical Corporation. Homogeneous brazing foils of copper based metallic glasses. 4,209,570, Cl. 428-606.000.
Deeg, Helmut; and Schulze, Siegmund, to Sulzer Brothers Limited. Filter for large gas quantities. 4,209,311, Cl. 55-294.000.
Deepsea Ventures, Inc.: *See*—
Latimer, John P., 4,208,813, Cl. 37-58.000.
Deere & Company: *See*—
Heino, Dean L.; and Gruben, Wayne E., 4,208,929, Cl. 74-731.000.
Orlandea, Nicolae; and Wiley, Jack C., 4,209,072, Cl. 180-245.000.
Wagner, Joseph F.; and Murray, Richard E., 4,209,204, Cl. 305-11.000.
DeFraites, Arthur A. Method and apparatus for treating sewage. 4,209,388, Cl. 210-8.000.
Delcroix, Jean L.; and Peyraud, Jean M. Source for plasma of large transverse section and constituting an ion accelerator. 4,209,703, Cl. 250-423.00R.
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., to Wisconsin Alumni Research Foundation. 1α-Hydroxycalcioic acid and esters thereof. 4,209,634, Cl. 560-116.000.
deLumen, Benito O.: *See*—
Clatfelter, Kenneth; LoPresti, George M.; Conte, Joseph A.; and deLumen, Benito O., 4,209,541, Cl. 426-430.000.
DEMAG, Aktiengesellschaft: *See*—
Somborn, Gunter; Kluge, Johannes; Rotthaus, Dirk; Hasselmann, Heinz; and Lichtenvort, Uwe, 4,209,681, Cl. 200-157.000.
Denefe, John C. Two rail overhead conveyor device. 4,208,765, Cl. 17-45.000.
Denis, Gerard M.; Ginglinger, Bernard M.; and Rothamel, Claude M., to Pont-A-Mousson S.A. Method of manufacturing products of cross-linked thermoplastic material. 4,209,484, Cl. 264-184.000.
Dennehey, T. Michael: *See*—
Alexander, John B.; Dennehey, T. Michael; and Goldhaber, Richard P., 4,209,013, Cl. 128-213.00A.
Dennison, Stanley M.: *See*—
Puri, Ajay K.; Caruso, Michael J.; Dennison, Stanley M.; and Brown, Jay, 4,209,781, Cl. 340-347.0DA.
Dentalgerate "Condylator" Peter T. Gerber: *See*—
Gerber, Albert, 4,208,794, Cl. 433-197.000.
DeRouen, Adrian J. Universal jack and work positioning mechanism. 4,209,166, Cl. 269-71.000.
Deschamps, Bernard: *See*—
Marchal, Gerard; Dumez, Gilles; and Deschamps, Bernard, 4,209,079, Cl. 184-6.100.
Deussner, Herbert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Apparatus and method for the thermal treatment of fine grained material. 4,209,296, Cl. 432-14.000.
Deutsche Gesellschaft fur Wiederaufarbettung von Kernbrennstoffen GmbH: *See*—
Lahr, Helfried; and Krug, Guter, 4,209,399, Cl. 210-59.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, 4,209,461, Cl. 260-545.00R.
Dexter, Jeffrey L.; Fairweather, William E.; and Shurtleff, Harold R., to Huestis Machine Corp. Apparatus and method for cleaning wafers. 4,208,760, Cl. 15-302.000.
Diana, Guy D.; and Carabateas, Philip M., to Sterling Drug Inc. Antiviral arylenedioxyalkyl substituted pyrazoles. 4,209,526, Cl. 424-273.00P.
Diaz, Stephen H.; and Horsma, David A., to Raychem Corporation. Methods for sealing closure members to substrates. 4,209,352, Cl. 156-49.000.
Diehl GmbH & Co.: *See*—
Friedrich, Rudolf, 4,209,086, Cl. 192-53.00F.

Diem, Hans: *See*—
Wolf, Dieter; Diem, Hans; Grabowsky, Otto; and Matthias, Guenther, 4,209,466, Cl. 568-487.000.

Diemakers, Inc.: *See*—
Spalding, George T., 4,209,058, Cl. 164-100.000.

Diesel Kiki Co., Ltd.: *See*—
Takada, Haruhiko, 4,209,287, Cl. 418-93.000.

Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, to Siemens Aktiengesellschaft. Magnetic lens arrangement for corpuscular radiation equipment working under a vacuum. 4,209,701, Cl. 250-396.0ML.

Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, to Thomson-CSF. Selenium layer piezoelectric device. 4,209,725, Cl. 310-313.000.

Dikeman, James E.: *See*—
Bender, Herman G.; and Dikeman, James E., 4,209,742, Cl. 324-72.500.

Dil, Jan G., to U.S. Philips Corporation. Record carrier containing information in an optically readable radiation reflecting information structure. 4,209,804, Cl. 358-128.500.

DiLeo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., to Western Electric Company, Incorporated. Method of fabricating a microelectronic device utilizing unfilled epoxy adhesive. 4,209,358, Cl. 156-293.000.

Dimarco, Bernard; Kralik, Andrew J.; and Perkins, Norman P., Jr., to Gould Inc. Circuit breaker and accessory devices therefor. 4,209,760, Cl. 335-17.000.

Dimension Weld Internal Corporation: *See*—
Kuroda, Minoru, 4,209,354, Cl. 156-219.000.

Dirksen, Henry A.: *See*—
Duncan, Dennis A.; and Dirksen, Henry A., 4,209,490, Cl. 422-109.000.

Dirksing, Robert S., to Procter & Gamble Company, The. Passive dosing dispenser employing trapped air bubble to provide air-lock. 4,208,747, Cl. 4-228.000.

Dischert, Robert A.; and Cosgrove, William J., to RCA Corporation. System for increasing the sharpness in a television picture. 4,209,801, Cl. 358-37.000.

Ditlinger, Richard J., to Bendix Corporation, The. Piston with extended axial travel. 4,208,952, Cl. 92-13.000.

Dock, Mortimer R. Method of securing a filtering mass for tobacco smoke within a housing encompassing said mass. 4,209,026, Cl. 131-187.000.

Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts: *See*—
Patzschke, Hans-Peter, 4,209,598, Cl. 525-333.000.

Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Filled food product and method of making same. 4,209,536, Cl. 426-94.000.

Doll, Calvin K.; and Tyrrell, Phillip A., to Phillips Petroleum Company. Container manufacturing apparatus and method. 4,208,955, Cl. 93-44.000.

Dominique, Cecil G., to Aro Corporation, The. Follower plate wiper. 4,209,105, Cl. 220-93.000.

Donaldson Company, Inc.: *See*—
Berkhoel, James L., 4,209,310, Cl. 55-273.000.

Donaldson, Edward: *See*—
Powell, Thomas E.; and Donaldson, Edward, 4,209,024, Cl. 130-27.00T.

Donath, Bernhard K.: *See*—
Donath, Norbert W.; and Donath, Bernhard K., 4,209,782, Cl. 340-147.0MD.

Donath, Norbert W.; and Donath, Bernhard K., to Wachtler, Maximilian. Method and circuit arrangement for the electronically controlled release of door, safe and function locks using electronically coded keys. 4,209,782, Cl. 340-147.0MD.

Dorgathen, Friedrich, to Montanus Industrieanlagen GmbH. Magnetic filter apparatus. 4,209,403, Cl. 210-222.000.

Dory, Jacques, to CGR Ultrasonic. Echography apparatus for medical diagnosis, using a multiple-element probe. 4,209,022, Cl. 128-660.000.

Douglas, Frank C.: *See*—
Lemkey, Franklin D.; Douglas, Frank C.; Golden, Gerald S.; and Brooks, Clyde S., 4,209,008, Cl. 126-452.000.

Douglas, James L., to Tecumseh Products Company. Snap-fit lubricant pick-up tube for a motor compressor. 4,209,080, Cl. 184-6.160.

Dow Chemical Company, The: *See*—
Coyne, Brenton S., 4,209,473, Cl. 264-22.000.
Lee, George A., 4,209,371, Cl. 204-159.220.
Mixan, Craig E.; and Burk, George A., 4,209,522, Cl. 424-270.000.
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,208,907, Cl. 73-190.00R.

Dressel, Lawrence J.: *See*—
Berardi, James A.; Chelcun, Darrell; Dressel, Lawrence J.; and Westphal, Bruce D., 4,209,840, Cl. 364-200.000.

Drexelbrook Controls, Inc.: *See*—
Maltby, Frederick L.; and Kramer, L. Jonathan, 4,208,909, Cl. 73-304.00C.

Dreyer, Heinz; and Wiemeyer, Benno, to Amazonen-Werke. Seed drill having parallel guide means for the movable shank. 4,208,974, Cl. 111-85.000.

Drori, Mordeki. Air-relief valves. 4,209,032, Cl. 137-202.000.

Droubay, Michel, to Waterman S.A. Structure for reduced ink evaporation. 4,209,263, Cl. 401-198.000.

Drugge, Robert: *See*—
Nordmark, Per-Olle; and Drugge, Robert, 4,209,097, Cl. 209-668.000.

Dube, James H.; and Miller, Ralph, to Ciba-Geigy Corporation. Process for the purification of O,O-di(lower)alkyldithiophosphoric acids. 4,209,471, Cl. 260-990.000.

Dubos, Jacques; and Jacques, Andre, to Thomson-CSF. End structure for a bundle of optical fibres arranged in a hexagon. 4,209,227, Cl. 350-96.220.

Ducrot, Pol B. L.; and Cloup, Jean-Paul, to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Electric motors supolied with chopped current. 4,209,720, Cl. 310-45.000.

Duerr, Dieter: *See*—
Pissiotas, Georg; Duerr, Dieter; and Rohr, Otto, 4,209,319, Cl. 71-121.000.

Duhl, David N.; and Olson, Walter E., to United Technologies Corporation. Heat treated superalloy single crystal article and process. 4,209,348, Cl. 148-3.000.

Duinker, Simon, to N. V. Optische Industrie "De Oude Delft". Apparatus for the element-wise reconstruction of a tomogram of a cross-section of an object. 4,209,827, Cl. 364-414.000.

Dumez, Gilles: *See*—
Marchal, Gerard; Dumez, Gilles; and Deschamps, Bernard, 4,209,079, Cl. 184-6.100.

Dumolo, David, to Fordath Limited. Foundry binders. 4,209,428, Cl. 260-18.0TN.

Duncan, Dennis A.; and Dirksen, Henry A., to Institute of Gas Technology. Reactor coking simulator. 4,209,490, Cl. 422-109.000.

Dunlop Australia Limited: *See*—
McDowall, William L.; and Maplesden, Alan K., 4,209,575, Cl. 429-146.000.

Dunlop Limited: *See*—
Mitchell, William E., 4,209,765, Cl. 340-58.000.
Udall, William S., 4,209,051, Cl. 152-362.00R.

Dunn, Lloyd G.; and Willis, Wilburn C., to Aluminum Company of America. Linerless plastic closure. 4,209,102, Cl. 215-329.000.

Du Pont de Nemours, E. I., and Company: *See*—
Albert, Robert E., 4,209,619, Cl. 544-211.000.
Lohner, Donald, 4,209,329, Cl. 430-502.000.
Prichard, William W., 4,209,651, Cl. 568-861.000.

du Quesne, Francis. Apparatus for fitting and removing an automobile tire. 4,209,053, Cl. 157-1.240.

Dusza, John P.; Hardy, Robert A., Jr.; and Albright, Jay D., to American Cyanamid Company. (Substituted-phenyl)-1,2,4-triazolo[4,3-a]-pyrimidines and (substituted-phenyl)-1,2,4-triazolo[1,5-a]pyrimidines. 4,209,621, Cl. 544-263.000.

Dutcher, Daniel P., to Champion International Corporation. Closure for blister card type container. 4,209,095, Cl. 206-469.000.

Dutcher, Robert G.; and O'Neil, Edward G., to Medtronic, Inc. Stylet insertion guide and rotation control device for use with body implantable lead. 4,209,019, Cl. 128-419.00P.

Dutton, John P.: *See*—
Zawacki, Joseph H.; and Dutton, John P., 4,208,900, Cl. 72-354.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Hubsch, Gunter; and Stahlmann, Rudolf, 4,208,968, Cl. 102-92.700.

E. F. Houghton and Co.: *See*—
Holgado, Rosauro V.; and Rakoff, Philip, 4,209,414, Cl. 252-75.000.

E M I Limited: *See*—
White, Eric L. C., 4,209,785, Cl. 343-7.0PF.

E. R. Squibb & Sons, Inc.: *See*—
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,209,614, Cl. 536-25.000.

Earnhardt, Daniel E.; and Hogeman, Robert L., to General Motors Corporation. Automatic metal working machine part counter. 4,208,772, Cl. 29-37.00R.

Eastman Kodak Company: *See*—
Joseph, Douglas C., 4,209,584, Cl. 430-527.000.
McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., 4,209,580, Cl. 430-218.000.

Eaton Corporation: *See*—
Brown, Harry W., 4,209,677, Cl. 200-67.00D.
Hansen, James E., 4,209,816, Cl. 361-23.000.
Sampson, Ernest C., 4,208,798, Cl. 33-180.0AT.

Eaton Stamping Company: *See*—
Hamman, Lyle J., 4,209,723, Cl. 310-112.000.

Eberhardt, H. Alfred, to Hale Fire Pump Company. Pump assembly. 4,209,282, Cl. 417-251.000.

Ebihara, Heihachiro, to Citizen Watch Co., Ltd. Electronic timepiece equipped with alarm. 4,208,866, Cl. 368-251.000.

Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, to Verkaufsgesellschaft fur Teererzeugnisse. Process for the production of a product with high carbon content from waste soot. 4,209,323, Cl. 75-48.000.

Eckhardt, Sandor: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.

Edison Price Incorporated: *See*—
Goodbar, Isaac, 4,209,822, Cl. 362-19.000.

Edmisten, John H. Firearm hanger. 4,209,157, Cl. 248-360.000.

Edmunds, William A. Wind driven prime mover. 4,209,281, Cl. 416-197.00A.

Edwards, Bill R. Method of determining foreign material in food products using ultrasonic sound. 4,208,915, Cl. 73-620.000.

Edwards, Harry, to Imperial Chemical Industries Limited. Process for coating a web. 4,209,557, Cl. 427-373.000.

Edwards, John W., to Ginny Bee Harvester Corporation. Crop harvesting apparatus. 4,208,860, Cl. 56-328.00R.

Edwards, Ralph W.: *See—*
Carolus, David T.; Edwards, Ralph W.; and Morrin, Paul C., 4,209,792, Cl. 343-903.000.
Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Complementary semiconductor device. 4,209,797, Cl. 357-42.000.
Egawa, Hideharu: *See—*
Arimura, Yoshiaki; Egawa, Hideharu; and Suzuki, Yasoji, 4,209,830, Cl. 364-490.000.
Eglinton, Robert B., to Chromalloy American Corporation. Roll end protection. 4,208,790, Cl. 29-798.000.
Ehrl, Winfried: *See—*
Billenstein, Siegfried; and Ehrl, Winfried, 4,209,456, Cl. 260-458.00F.
Eibeck, Richard E.: *See—*
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,209,654, Cl. 585-465.000.
Eichler, Helmut; and Knopf, Franz. Method for electrostatic assistance in printing processes, and printing machines having electrostatic substrate contact pressure. 4,208,965, Cl. 101-426.000.
Eijsberg, Pieter: *See—*
Brady, John W.; Eijsberg, Pieter; and Logemann, Johan D., 4,209,599, Cl. 526-64.000.
Eisler, Gyula, to MTA Kozponti Fizikai Kutato Intezete. Linear positioning device, preferably for optical measurements. 4,209,233, Cl. 350-321.000.
Elatontsev, Albert I.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.
Electricity Council, The: *See—*
Stirling, Robert, 4,208,883, Cl. 62-192.000.
Electrolex GmbH: *See—*
Michael, Harald, 4,209,034, Cl. 137-236.00R.
Electronic Surveillance Fence Security, Inc.: *See—*
Frederick, Richard M., 4,209,776, Cl. 340-541.000.
Elflein, Lorenz, to Alfred Honsel, Nieten - und Metallwarenfabrik, Firma. Rivet tongs. 4,208,901, Cl. 72-391.000.
Elias, Thomas C., to Boise Cascade Corporation. Patch top closure member including a monoaxially oriented film layer. 4,209,126, Cl. 229-43.000.
Ellens, Gordon A. Method for fabricating a seat belt assembly connection. 4,208,778, Cl. 29-423.000.
Eller, James D. Lateral thruster for a water vessel. 4,208,978, Cl. 114-151.000.
Elrod, David W.: *See—*
Marshall, Vincent P.; Elrod, David W.; and Wiley, Paul F., 4,209,611, Cl. 536-17.00A.
Emerson Electric Co.: *See—*
Henton, Paul V., 4,209,401, Cl. 210-136.000.
Martin, Richard J.; and Mittendorf, Richard J., 4,209,274, Cl. 408-126.000.
Moglia, Henry J.; and Sonnino, Carlo B., 4,209,686, Cl. 219-375.000.
Peachee, C. Theodore, Jr., 4,209,722, Cl. 310-90.000.
Emhart Industries, Inc.: *See—*
Surko, Walter E., Jr., 4,208,894, Cl. 70-364.00A.
Endowment and Research Foundation at Montana State University: *See—*
Visscher, Saralee N., 4,209,530, Cl. 424-317.000.
Energy Dynamics, Inc.: *See—*
Schwemin, Arnold J., 4,209,061, Cl. 165-10.000.
Energy Recycling Corporation Pty. Ltd.: *See—*
Lloyd, Robert; and Turner, Maxwell J., 4,208,789, Cl. 29-650.000.
English, William J.; and Dechant, Donald C. Cut-off mechanism for wrapping machines. 4,208,853, Cl. 53-389.000.
Enix, Clarence. Collapsible four wheel electric powered vehicle. 4,209,073, Cl. 180-65.00R.
Epstein, James: *See—*
Bessett, Richard A.; Epstein, James; and Goebel, Franz, 4,209,571, Cl. 429-7.000.
Erdman, Ann L.; and Shue, James W. Jewelry storing and displaying natural placer gold. 4,208,888, Cl. 63-2.000.
Erickson, Leif O., to Minnesota Mining and Manufacturing Company. Fast forward-reverse mechanism for cassette type tape recorder. 4,209,145, Cl. 242-204.000.
Erickson, Wayne F.: *See—*
McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., 4,209,580, Cl. 430-218.000.
Escher Wyss Limited: *See—*
Christ, Alfred, 4,209,405, Cl. 210-376.000.
Esquire, Inc.: *See—*
Nuver, Eric L. H.; and Gaertner, Robert F., 4,209,738, Cl. 323-22.0SC.
Estech Specialty Chemicals Corporation: *See—*
Werber, Gerhardt P., 4,209,604, Cl. 526-270.000.
Esvelt, Robert P.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,209,634, Cl. 560-116.000.
Ethicon, Inc.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,209,607, Cl. 528-291.000.
Ethyl Corporation: *See—*
Shin, Kju H., 4,209,643, Cl. 568-594.000.
Evans, David V.; Davis, John P.; and Shaw, Thomas L. Device for extracting energy from waves. 4,208,877, Cl. 60-495.000.
Evans, Francis E.: *See—*
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,209,654, Cl. 585-465.000.
Evans Products Company: *See—*
Matyas, Tibor, 4,208,970, Cl. 410-153.000.
Evans, Robert F. Fusion technique of assembling rotary drill bit and adjusting gage of cutting elements. 4,209,684, Cl. 219-121.0EM.
Everard, John D., to Post Office, The. Code converters. 4,209,773, Cl. 340-347.0DA.
Everett/Charles, Inc.: *See—*
Hines, Clyde K., 4,209,745, Cl. 324-158.00F.
EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft: *See—*
Schmidt, Klaus, 4,208,959, Cl. 99-421.0HV.
Ewig, John F., Jr., to Parker Manufacturing Company. Shearing tool. 4,208,792, Cl. 30-228.000.
Explosive Technology, Inc.: *See—*
Burkdoll, Frank B., 4,209,823, Cl. 362-84.000.
Extranuclear Laboratories, Inc.: *See—*
Fite, Wade L.; and Myers, Richard L., 4,209,693, Cl. 250-251.000.
Exxon Production Research Company: *See—*
Jahns, Hans O.; and Wheeler, Joe D., 4,208,977, Cl. 114-40.000.
Exxon Research & Engineering Co.: *See—*
Baker, Richard H., 4,209,711, Cl. 307-104.000.
Winans, Esther D.; Ryer, Jack; Gutierrez, Antonio; and Shaub, Harold, 4,209,411, Cl. 252-56.00D.
Zimmerman, Abraham A.; and Ryer, Jack, 4,209,422, Cl. 252-344.000.
Facet Enterprises, Inc.: *See—*
Mortensen, Harold R., 4,208,922, Cl. 74-7.00R.
Fairchild Camera and Instrument Corporation: *See—*
Krupp, David M.; and Hood, Robert B., 4,209,833, Cl. 364-569.000.
Fairweather, William E.: *See—*
Dexter, Jeffrey L.; Fairweather, William E.; and Shurtleff, Harold R., 4,208,760, Cl. 15-302.000.
Fajeau, Maurice: *See—*
Chaix, Jean-Edmond; and Fajeau, Maurice, 4,208,987, Cl. 122-32.000.
Falk, Richard A. Holder for a stream sampler. 4,208,913, Cl. 73-425.40R.
Farley, William C.: *See—*
McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., 4,209,580, Cl. 430-218.000.
Fastenmeier, Karl: *See—*
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,209,018, Cl. 128-303.170.
Faulkner, Albert A., to SmithKline Corporation. Liquid flow viewing cell and method for analyzing liquid stream. 4,209,256, Cl. 356-246.000.
Fayal, James E., to Greene Plastics Corporation. Nonsplitting molded plastic strap configuration. 4,209,558, Cl. 428-28.000.
Feder, Joseph: *See—*
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,209,587, Cl. 435-41.000.
Fedosenko, Jury K.: *See—*
Gerasimov, Viktor G.; Kljuev, Vladimir V.; Kuznetsov, Viktor B.; Kurozaev, Viktor P.; Rogachev, Viktor I.; Sukhorukov, Vasily V.; Ulitin, Jury M.; and Fedosenko, Jury K., 4,209,744, Cl. 324-241.000.
Feist, Wolf-Dieter, to Motoren- und Turbinen-Union Munchen GmbH. Method for determining the interaction between a chemical solution and an object immersed in the solution. 4,208,914, Cl. 73-590.000.
Feldle, Kurt; and Schonberger, Reiner, to SKF Kugellagerfabriken GmbH. External rotor motor. 4,209,721, Cl. 310-67.00R.
Feldman, Paul L.; and Sampathkumar, Krishnaswamy, to Research-Cottrell. Pulsed electrostatic precipitator. 4,209,306, Cl. 55-2.000.
Fenimore, Edward E.; and Cannon, Thomas M., to United States of America, Energy. Coded aperture imaging with uniformly redundant arrays. 4,209,780, Cl. 340-146.30F.
Ferrier, Donald R.: *See—*
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,209,331, Cl. 106-1.230.
Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 4,209,158, Cl. 248-421.000.
Fey, Maurice G.: *See—*
Harvey, Francis J., II; and Fey, Maurice G., 4,209,321, Cl. 75-10.00R.
Fiala, Edward J.: *See—*
Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., 4,208,976, Cl. 113-121.00A.
Field, Jesse L., Jr., to Caterpillar Tractor Co. Apparatus for producing different flow rates of a fluid. 4,208,874, Cl. 60-420.000.
Filters International Inc.: *See—*
White, Eugene B.; and Sharma, Mahindar N., 4,209,396, Cl. 210-47.000.
Fisch, Michael H.: *See—*
Clark, John R.; and Fisch, Michael H., 4,209,431, Cl. 260-23.00H.
Fischer, Adolf, deceased (by Fischer, Caecilia E., heiress-at-law), to BASF Aktiengesellschaft. Herbicidal compositions. 4,209,317, Cl. 71-88.000.
Fischer, Caecilia E., heiress-at-law: *See—*
Fischer, Adolf, deceased, 4,209,317, Cl. 71-88.000.

Fischer, Joseph, to National Distillers and Chemical Corporation. Extraction resistant liquid ethylene-vinyl acetate copolymer plasticized polyvinyl chloride resin. 4,209,437, Cl. 260-31.8OR.
Fischer, Moritz. Weather protection systems for road vehicles. 4,209,197, Cl. 296-216.000.
Fishtein, Boris M.: *See*—
Tkachev, Valentin N.; Fishtein, Boris M.; Vlasenko, Viktor D.; and Kazintsev, Nikolai V., 4,209,057, Cl. 164-51.000.
Fite, Wade L.; and Myers, Richard L., to Extranuclear Laboratories, Inc. Surface ionization monitor for particulates and method. 4,209,693, Cl. 250-251.000.
Fite, Wade L. Methods and apparatus for mass spectrometric analysis of constituents in liquids. 4,209,696, Cl. 250-281.000.
Fiujita, Susumu: *See*—
Abe, Kumiomi; and Fiujita, Susumu, 4,209,225, Cl. 350-46.000.
Fives-Cail Babcock: *See*—
Marchal, Gerard; Dumez, Gilles; and Deschamps, Bernard, 4,209,079, Cl. 184-6.100.
Flachbarth, Charles T.; and Hadfield, Robert W., to Textron Inc. Out-of-sight service fittings. 4,209,660, Cl. 174-48.000.
Flachenecker, Gerhard: *See*—
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz, 4,209,018, Cl. 128-303.170.
Flanders, David R., to United States of America, Navy. Acousto-optic coupler for glide slope control systems. 4,209,767, Cl. 340-26.000.
Fleischer, Henry. Coupling device. 4,209,190, Cl. 285-15.000.
Flint, John R.: *See*—
Stites, David G.; Flint, John R.; and Kreuser, Michael L., 4,209,238, Cl. 353-85.000.
Flockencier, Stuart W.: *See*—
Gilham, Arthur W. S.; and Flockencier, Stuart W., 4,209,832, Cl. 364-521.000.
Florczak, John: *See*—
Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., 4,208,976, Cl. 113-121.00A.
Florence, Judit K.: *See*—
Rohner, Michel A.; and Florence, Judit K., 4,208,810, Cl. 35-10.240.
Florian, Roy S., to Nickson Industries, Inc. Heavy-duty bracket and hanger assembly employing same. 4,209,155, Cl. 248-62.000.
FMC Corporation: *See*—
Knight, Houston W., 4,209,192, Cl. 285-178.000.
Tumey, Lawrence F.; and Zuker, Paul, 4,209,288, Cl. 425-113.000.
Fogg, Daniel A.; Brandt, Maurice W.; and Klemundt, Marshall, to Gerber Products Company. Glass fragment detector. 4,209,802, Cl. 358-106.000.
Foglia, Vincent. Fluid flow energy extracting device or wind dam. 4,208,873, Cl. 60-398.000.
Folgmann, Helmut G.: *See*—
Kosten, Richard B.; and Folgmann, Helmut G., 4,209,218, Cl. 339-97.00R.
Ford Aerospace & Communications Corp.: *See*—
Stewart, George W., Jr., 4,209,224, Cl. 350-6.400.
Ford Motor Company: *See*—
Chattha, Mohinder S., 4,209,595, Cl. 525-161.000.
Merchant, Stanley R.; and Cermak, Michael J., 4,208,786, Cl. 29-612.000.
Simko, Aladar O.; Choma, Michael A.; and Schechter, Michael M., 4,208,995, Cl. 123-119.00A.
Fordath Limited: *See*—
Dumolo, David, 4,209,428, Cl. 260-18.0TN.
Forrest, Richard E. Book cover. 4,209,187, Cl. 281-19.00R.
Forster, John W.; and Roper, Louis E., to Phillips Petroleum Company. Drilling fluid additives. 4,209,409, Cl. 252-8.50A.
Foseco International Limited: *See*—
Cooper, Stephen M.; Webster, Thomas H.; and Jaunich, Helmut, 4,209,325, Cl. 75-58.000.
Wallace, John F.; and Neuman, Robert W., 4,209,324, Cl. 75-58.000.
Foss, Fred: *See*—
Curl, Robert B.; and Foss, Fred, 4,209,109, Cl. 221-7.000.
Fox, Fred: *See*—
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.
Foxboro Company, The: *See*—
Freitas, Manuel P.; and Klapper, Jacob, 4,209,750, Cl. 455-63.000.
Frahme, Carl E.; and Wygant, Gary E., to Industrial Insulations, Inc. Furnace with homogeneous refractory tubular liner. 4,209,295, Cl. 432-247.000.
Franco, Luigi; and Bertotti, Giorgio, to Centro Ricerche Fiat S.p.A. Exhaust silencer for an agricultural tractor. 4,209,076, Cl. 181-272.000.
Frantello, Donald. Inch gauge. 4,208,799, Cl. 33-187.000.
Fraula, Louis F.: *See*—
Lane, Buddy F.; and Fraula, Louis F., 4,209,343, Cl. 134-22.00C.
Frederick, Louis S.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,209,025, Cl. 131-17.00R.
Frederick, Richard M., to Electronic Surveillance Fence Security, Inc. Vibratory and ultrasonic fence intruder detection system. 4,209,776, Cl. 340-541.000.
Freeman, George M.; and Robinson, Victor E., to Texasgulf Canada Ltd. Cathode stripping system. 4,209,379, Cl. 204-198.000.
Freeny, Charles C., Jr., to Gould Inc. Method for monitoring the location of monitored objects. 4,209,787, Cl. 343-112.00R.
Freitas, Manuel P.; and Klapper, Jacob, to Foxboro Company, The. Swept-carrier transmission system adapted for use in process control systems. 4,209,750, Cl. 455-63.000.
French, Robert J., to Goodyear Aerospace Corporation. Wheel flange retaining ring. 4,209,052, Cl. 152-410.000.
Frey, Volker: *See*—
Graf, Werner; Frey, Volker; John, Peter; and Zeller, Norbert, 4,209,454, Cl. 556-457.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Janssen, Wilhelm; Vopel, Karl-Heinrich; and Meyer, Gunter, 4,209,322, Cl. 75-25.000.
Kaes, Gunter, 4,208,864, Cl. 57-58.340.
Friedrich, Rudolf, to Diehl GmbH & Co. Synchromesh gear. 4,209,086, Cl. 192-53.00F.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Oya, Hiroo; and Kakinuma, Akio, 4,209,494, Cl. 422-179.000.
Fuji Xerox Co., Ltd.: *See*—
Pu, Lyong S.; and Kamoda, Hitoshi, 4,209,579, Cl. 430-78.000.
Fujio, Masaaki. Sleeve seal fitting machine. 4,208,857, Cl. 53-585.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Mine, Kazumasa; and Oshima, Takeo, 4,209,518, Cl. 424-250.000.
Fujita, Katsuhiro: *See*—
Tomita, Kazuo; Murakami, Tadashi; Tsuji, Hideakira; Matsumoto, Keigo; Fujita, Katsuhiro; and Yokoi, Shinji, 4,209,512, Cl. 424-200.000.
Fujiwara, Toshio; Sakimoto, Junji; and Yoshioka, Hisaya, to Ohbayashi-Gumi, Ltd. Tail packing for a slurry pressurized shield. 4,209,268, Cl. 405-147.000.
Fukuhara, Junzo: *See*—
Okada, Yasunori; and Fukuhara, Junzo, 4,209,438, Cl. 260-31.8XA.
Fukumoto, Mitsunobu: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.
Fukuyoshi, Kenzo: *See*—
Masaki, Tatsuo; Miyajima, Keiji; Fukuyoshi, Kenzo; and Kumagai, Hiroji, 4,209,551, Cl. 427-68.000.
Fuller, George, to I.S. C. Chemicals Limited. Production of halogenated benzonitriles. 4,209,457, Cl. 260-465.00G.
Furutani, Toshinobu: *See*—
Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,378, Cl. 204-195.00S.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,377, Cl. 204-195.00S.
G.D. Societa per Aziori: *See*—
Seragnoli, Enzo, 4,208,854, Cl. 53-575.000.
Gac, Robert; Dal Pont, Jean-Pierre; and Levet, Frederic, to Rhone-Poulenc Industries. Process for crystallizing an adduct of 2,2-di(4-hydroxyphenyl) propane and phenol. 4,209,646, Cl. 568-724.000.
Gaertner, Robert F.: *See*—
Nuver, Eric L. H.; and Gaertner, Robert F., 4,209,738, Cl. 323-22.0SC.
GAF Corporation: *See*—
Suwala, David W.; and Barabas, Eugene S., 4,209,562, Cl. 428-271.000.
Gainer, Gordon C.: *See*—
Luck, Russell M.; and Gainer, Gordon C., 4,208,787, Cl. 29-623.000.
Galimberti nee Sestini, Grazia. Web-feed control apparatus. 4,209,708, Cl. 250-548.000.
Gallivan, Robert M.; and Matschei, Peter K., to American Can Company. Fractionation of oil obtained by pyrolysis of lignocellulosic materials to recover a phenolic fraction for use in making phenol-formaldehyde resins. 4,209,647, Cl. 568-762.000.
Gandolfi, Maria L.; and Bonaga, Maria L., to Horvath, Barbara. Safety apparatus for stopping gas leakages. 4,209,291, Cl. 431-16.000.
Gardikes, John J.; and Toeniskoetter, Richard H., to Ashland Oil, Inc. Aluminum phosphate binder composition cured with ammonia and amines. 4,209,056, Cl. 164-16.000.
Garrett Corporation, The: *See*—
Riple, James C., Jr., 4,208,871, Cl. 60-39.28R.
Garsky, Victor M.: *See*—
Lapidus, Milton; and Garsky, Victor M., 4,209,441, Cl. 260-112.50S.
Garver, John P. Tennis racket. 4,209,170, Cl. 273-73.00G.
Garzon, Ruben D., to Gould Inc. High speed actuating mechanism. 4,209,680, Cl. 200-148.00R.
Garzon, Ruben D., to Gould Inc. Synchronous circuit breaker. 4,209,814, Cl. 361-5.000.
Gates, Willard G.; and Hale, Gerald J., to United States of America, Energy. Sputter target. 4,209,375, Cl. 204-192.00R.
Gaura, Charles F.; Volkman, John C.; and Cramlet, Charles, to J. I. Case Company. Lateral adjustment structure for telescoping boom assembly. 4,208,847, Cl. 52-118.000.
Gebr. Hilgeland: *See*—
Pieper, Wilhelm, 4,208,899, Cl. 72-344.000.
Gebrueder Buehler AG: *See*—
Manser, Josef; and Dankesreiter, Georg, 4,208,806, Cl. 34-1.000.
Gedig, Alfred: *See*—
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Gehrmann, Klaus: *See*—
Ohorodnik, Alexander; Auer, Eberhard; and Gehrmann, Klaus, 4,209,460, Cl. 260-544.00Y.
Gellerstedt, Nils: *See*—
Davegardh, Tore; Gellerstedt, Nils; and Sahlin, Folke, 4,208,945, Cl. 86-20.00R.
Gelsenberg Aktiengesellschaft: *See*—
Heimerl, Wilfried; Schiewer, Edwin; and De, Amal K., 4,209,421, Cl. 252-301.10W.
Gemmeke, Wilfried: *See*—
Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, 4,209,323, Cl. 75-48.000.
General Electric Company: *See*—
Betts, Joseph E.; and Holub, Fred F., 4,209,566, Cl. 428-389.000.
Cacalloro, Philip A.; McCloy, Albert J.; and Bennett, Moreland P., 4,209,064, Cl. 165-130.000.
Chatterji, Debajyoti; and Park, Dong-Sil, 4,209,573, Cl. 429-104.000.
Coker, Thomas G.; and La Conti, Anthony B., 4,209,368, Cl. 204-98.000.
Herrick, Carlyle S., 4,209,312, Cl. 62-4.000.
Klein, Keith W.; and Palmieri, Joseph M., 4,209,761, Cl. 335-17.000.
Lopes, William F.; and Carberg, William G., 4,208,882, Cl. 60-653.000.
Prochazka, Svante, 4,209,474, Cl. 264-29.500.
Reidenbach, Stanley G., 4,209,736, Cl. 320-22.000.
Stein, Leonard, 4,209,356, Cl. 156-643.000.
Sugalski, Raymond K., 4,209,737, Cl. 320-2.000.
Williams, Joseph B., 4,209,427, Cl. 260-17.500.
General Motors Corporation: *See*—
Baynes, Gene P., 4,208,950, Cl. 91-369.00B.
Brademeyer, David L.; and Parker, Donald L., 4,208,881, Cl. 60-578.000.
Byram, Robert J., 4,208,982, Cl. 116-34.00R.
Carolus, David T.; Edwards, Ralph W.; and Morrin, Paul C., 4,209,792, Cl. 343-903.000.
Chupak, John M.; Gladd, Joseph H.; and McNamee, James W., 4,209,221, Cl. 339-223.00S.
Coha, Thomas F.; Klinck, Michael P.; and Jaje, Thomas, 4,208,981, Cl. 116-28.100.
Earnhardt, Daniel E.; and Hogeman, Robert L., 4,208,772, Cl. 29-37.00R.
Lochmann, Robert L.; and Stevens, Bryce L., 4,209,284, Cl. 417-366.000.
Stark, Terrence L., 4,209,209, Cl. 308-23.000.
Szablowski, Teofil, 4,209,220, Cl. 339-217.00S.
Wiggans, John M., 4,209,038, Cl. 137-547.000.
General Signal Corporation: *See*—
Sutton, Gary, 4,209,031, Cl. 137-106.000.
General Time Corporation: *See*—
St. Clair, Donald R.; and Ogden, Gerald W., 4,209,185, Cl. 280-734.000.
Geatles, William M. Kidney dialysis filter washing process. 4,209,402, Cl. 210-137.000.
Georg Menshen & Co. KG: *See*—
Stahl, Otto, 4,209,115, Cl. 222-536.000.
Gerard, Jean-Louis, to Societe Anonyme DBA. Disc brake and a guide key for such a brake. 4,209,083, Cl. 188-73.600.
Gerasimov, Viktor G.; Kljuev, Vladimir V.; Kuznetsov, Viktor B.; Kurozaev, Viktor P.; Rogachev, Viktor I.; Sukhorukov, Vasily V.; Ulitin, Jury M.; and Fedosenko, Jury K. Eddy current device for automatically testing the quality of elongated electrically conductive objects by non-destructive techniques. 4,209,744, Cl. 324-241.000.
Gerber, Albert, to Dentalgerate "Condylator" Peter T. Gerber. Set of artificial molar teeth. 4,208,794, Cl. 433-197.000.
Gerber Products Company: *See*—
Fogg, Daniel A.; Brandt, Maurice W.; and Klemundt, Marshall, 4,209,802, Cl. 358-106.000.
Gerber Scientific Instrument Company, The: *See*—
Wood, Kenneth O.; and Alford, Robert S., 4,209,239, Cl. 354-4.000.
Gerber, Werner. Adjustable ladder leveling device. 4,209,078, Cl. 182-203.000.
Germain, Alfred M. J., to Union Siderurgique Dunord et de l'Est de la France (USINOR). Machine for treating metal sheets. 4,209,345, Cl. 134-122.00R.
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., to Anaren Microwave, Incorporated. Antenna apparatus for bearing angle determination. 4,209,791, Cl. 343-854.000.
Gesellschaft fur Strahlen-und Umweltforschung mbH Munchen: *See*—
Renner, Gerhard; and Unsold, Eberhard, 4,209,697, Cl. 250-282.000.
Gibson, David K.; and Jones, Rick O., to International Business Machines Corporation. Continuously variable reduction copier optics systems. 4,209,248, Cl. 355-8.000.
Gidai, Katalin: *See*—
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.
Giffard, Philip J., to Mineral Deposits Limited. Method and apparatus for the wet gravity concentration of ores. 4,209,386, Cl. 209-459.000.
Gilbertson, John R.; and Crout, Richard J., to University of Pittsburgh. Antibacterial agent and method. 4,209,533, Cl. 424-343.000.
Gilham, Arthur W. S.; and Flockencier, Stuart W., to Chrysler Corporation. Computer-generated display for a fire control combat simulator. 4,209,832, Cl. 364-521.000.
Ginglinger, Bernard M.: *See*—
Denis, Gerard M.; Ginglinger, Bernard M.; and Rothamel, Claude M., 4,209,484, Cl. 264-184.000.
Ginny Bee Harvester Corporation: *See*—
Edwards, John W., 4,208,860, Cl. 56-328.00R.
Ginther, Lawrence B.: *See*—
Brandeberry, Raymond L.; Ginther, Lawrence B.; Lehr, Glen J.; and Sanford, Paul F., 4,209,556, Cl. 427-330.000.
Girling Limited: *See*—
Brearley, Malcolm, 4,209,203, Cl. 303-110.000.
Gladd, Joseph H.: *See*—
Chupak, John M.; Gladd, Joseph H.; and McNamee, James W., 4,209,221, Cl. 339-223.00S.
Glanzman, Norman. Razor usage indicator. 4,208,984, Cl. 116-307.000.
Glaxo Laboratories Limited: *See*—
Gregson, Michael; Cook, Martin C.; and Gregory, Gordon I., 4,209,616, Cl. 544-28.000.
Globe Ticket Company: *See*—
Betterley, James E., 4,209,189, Cl. 283-18.000.
Glovier, Lloyd H. Utility box locator. 4,209,103, Cl. 220-3.400.
Gnaedinger, John P. Emergency safety system. 4,209,267, Cl. 405-53.000.
Goebel, Franz: *See*—
Bessett, Richard A.; Epstein, James; and Goebel, Franz, 4,209,571, Cl. 429-7.000.
Goetzl, Horst; and Rattner, Manfred, to Siemens Aktiengesellschaft. X-ray diagnostic generator. 4,209,406, Cl. 250-402.000.
Goff, Clifford E., to Robertshaw Controls Company. Control device. 4,209,030, Cl. 137-84.000.
Golden, Gerald S: *See*—
Lemkey, Franklin D.; Douglas, Frank C.; Golden, Gerald S.; and Brooks, Clyde S., 4,209,008, Cl. 126-452.000.
Goldhaber, Richard P.: *See*—
Alexander, John B.; Dennehey, T. Michael; and Goldhaber, Richard P., 4,209,013, Cl. 128-213.00A.
Goodbar, Isaac, to Edison Price Incorporated. Light Polarizing illumination device. 4,209,822, Cl. 362-19.000.
Goodyear Aerospace Corporation: *See*—
French, Robert J., 4,209,052, Cl. 152-410.000.
Goodyear Tire & Rubber Company, The: *See*—
Buan, Angeles V., 4,209,042, Cl. 138-126.000.
Cottman, Kirkwood S., 4,209,648, Cl. 568-766.000.
Goransson: *See*—
Blomqvist, Leif; and Goransson, 4,209,210, Cl. 308-234.000.
Gorin, Georges J.; and Hoog, Josef T., to Tegal Corporation. Plasma reactor apparatus. 4,209,357, Cl. 156-643.000.
Goto, Yoshio: *See*—
Ii, Motohiko; Goto, Yoshio; Suzuki, Takashi; and Kubo, Sotoo, 4,209,398, Cl. 210-58.000.
Gould Inc.: *See*—
Clausing, Challiss I., 4,209,676, Cl. 200-50.0AA.
Dimarco, Bernard; Kralik, Andrew J.; and Perkins, Norman P., Jr., 4,209,760, Cl. 335-17.000.
Freeny, Charles C., Jr., 4,209,787, Cl. 343-112.00R.
Garzon, Ruben D., 4,209,680, Cl. 200-148.00R.
Garzon, Ruben D., 4,209,814, Cl. 361-5.000.
Lieberman, Walter G., 4,209,091, Cl. 206-333.000.
Rundel, Morton S.; Keller, Frank R.; and Moritz, Peter M., 4,209,820, Cl. 361-331.000.
Gozna, Eric R.: *See*—
Peck, Christopher M.; and Gozna, Eric R., 4,209,011, Cl. 128-87.00R.
Grabowsky, Otto: *See*—
Wolf, Dieter; Diem, Hans; Grabowsky, Otto; and Matthias, Guenther, 4,209,466, Cl. 568-487.000.
Graf, Werner; Frey, Volker; John, Peter; and Zeller, Norbert, to Wacker-Chemie GmbH. Preparation of hydrocarbonoxy containing polysiloxanes. 4,209,454, Cl. 556-457.000.
Graham, John S., to United States of America, Agriculture. Automatic spinning strength tester. 4,208,920, Cl. 73-828.000.
Graves, David J.: *See*—
Kim, Bang M.; Quinn, John A.; and Graves, David J., 4,208,902, Cl. 73-19.000.
Green, Harold A.; Merianos, John J.; Petrocci, Alfonso N.; and Weinstein, Morris, to Kewanee Industries. Flocculants for aqueous systems. 4,209,397, Cl. 210-54.000.
Greenberg, Robert. Method and apparatus for making material with a fusible backing. 4,209,553, Cl. 427-179.000.
Greene Plastics Corporation: *See*—
Fayal, James E., 4,209,558, Cl. 428-28.000.
Greenspan, Donald J. Method of making a valve apparatus. 4,209,485, Cl. 264-242.000.
Gregg, Anton T.; and Murphy, Robert E., to Caterpillar Tractor Co. Inspection of track assemblies. 4,209,205, Cl. 305-14.000.
Gregory, Gordon I.: *See*—
Gregson, Michael; Cook, Martin C.; and Gregory, Gordon I., 4,209,616, Cl. 544-28.000.
Gregson, Michael; Cook, Martin C.; and Gregory, Gordon I., to Glaxo Laboratories Limited. Syn isomers of cephalosporins having α-hydroximino- or α-acyloxyiminoacylamido groups at position-7. 4,209,616, Cl. 544-28.000.
Griebel, William C. Awning. 4,208,846, Cl. 52-74.000.
Griffith, James R.: *See*—
Keller, Teddy M.; and Griffith, James R., 4,209,458, Cl. 260-465.00F.

Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A. Method and apparatus for controlling a hydraulic screw press. 4,208,895, Cl. 72-8.000.

Grolman, Bernard; and Richards, William, to American Optical Corporation. Method for making ophthalmic measurements. 4,208,800, Cl. 33-200.000.

Gross-Given Manufacturing Company: *See*—
Lotspeich, Joseph A.; and Pertinen, Raymond W., 4,209,111, Cl. 221-75.000.

Grove, Dennis: *See*—
Roberts, Kipton J., 4,209,169, Cl. 273-29.00A.

Gruben, Wayne E.: *See*—
Heino, Dean L.; and Gruben, Wayne E., 4,208,929, Cl. 74-731.000.

Gruenfeld, Norbert, to Ciba-Geigy Corporation. 3-Aminoalkyl-4-aryltetrahydroazepines. 4,209,514, Cl. 424-244.000.

Grunwald, John J.: *See*—
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,209,331, Cl. 106-1.230.

Gryncewicz, Benjamin: *See*—
Wilson, Woodrow S.; and Gryncewicz, Benjamin, 4,209,114, Cl. 222-536.000.

Grzyb, Joseph: *See*—
Voyer, Peter E.; Walsh, Thomas C.; and Grzyb, Joseph, 4,208,774, Cl. 29-156.40R.

GTE Automatic Electric Laboratories Incorporated: *See*—
Kosten, Richard B.; and Folgmann, Helmut G., 4,209,218, Cl. 339-97.00R.

GTE Laboratories Incorporated: *See*—
Bessett, Richard A.; Epstein, James; and Goebel, Franz, 4,209,571, Cl. 429-7.000.

Guadagnolo, Robert N., to Hughes Aircraft Company. Pulse repetition interval autocorrelator system. 4,209,835, Cl. 364-715.000.

Gudaitis, Bernard V.; and Maximoff, Paul, to Thomas & Betts Corporation. Housing for removable mounting on printed circuit board. 4,209,217, Cl. 339-75.0MP.

Guedj, Richard: *See*—
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,209,725, Cl. 310-313.000.

Guinosso, Charles J.: *See*—
Sellstedt, John H.; Guinosso, Charles J.; Klaubert, Dieter H.; and Shriver, David A., 4,209,528, Cl. 424-304.000.

Gulf Research and Development Company: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,209,465, Cl. 568-385.000.

Gunther, Philip B.; and Nikitopoulos, Robert, to P. R. Mallory & Co. Inc. Means for improving manufacture of solid state cells. 4,209,479, Cl. 264-104.000.

Gutierrez, Antonio: *See*—
Winans, Esther D.; Ryer, Jack; Gutierrez, Antonio; and Shaub, Harold, 4,209,411, Cl. 252-56.00D.

Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Preparation of ester derivatives of polycarboxylic acids. 4,209,636, Cl. 560-190.000.

Guyot, Lucien, to Thomson-CSF. Device for the electrical analysis of an image. 4,209,803, Cl. 358-110.000.

Haarman & Reimer GmbH: *See*—
Oediger, Hermann; and Schulze, Andreas, 4,209,445, Cl. 260-340.50R.
Schulze, Andreas; and Oediger, Hermann, 4,209,446, Cl. 260-340.50R.

Haas, James L., to Mobay Chemical Corporation. Toluene diamine initiated polyether polyols. 4,209,609, Cl. 528-421.000.

Haas, Robert G.; and Lent, Charles V., to International Business Machines Corporation. Cooling manifold for multiple solenoid operated punching apparatus. 4,209,129, Cl. 234-108.000.

Habermehl, Fred M., III: *See*—
Murphy, Alan P.; and Habermehl, Fred M., III, 4,209,549, Cl. 427-11.000.

Habstritt, Charles H.: *See*—
Roll, Dwight M.; Kofstad, Myron L.; and Habstritt, Charles H., 4,208,835, Cl. 47-1.500.

Hachisuka, Hidehiro. Workbench for simultaneously cutting a plurality of patterns from a plurality of layers of overlapping material. 4,209,165, Cl. 269-54.500.

Hadfield, Robert W.: *See*—
Flachbarth, Charles T.; and Hadfield, Robert W., 4,209,660, Cl. 174-48.000.

Hagenbach, Robert J.; and Johnston, Robert G., to Xerox Corporation. Coating carrier materials by electrostatic process. 4,209,550, Cl. 427-27.000.

Hahm, Gerhard H.; and Henning, Walter, to Messrs. Jos. Zimmerman. Coil carrier with carrier elements extending parallel to its axis. 4,209,143, Cl. 242-118.110.

Haigh Engineering Company Limited, The: *See*—
Hussey, Dennis M., 4,209,678, Cl. 200-81.00R.

Hair, Hugh A.: *See*—
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,209,791, Cl. 343-854.000.

Hait, James M. Rotary irrigation system. 4,209,035, Cl. 137-344.000.

Halcon International, Inc.: *See*—
Onsager, Olav T.; and Szecsi, Peter L., 4,209,650, Cl. 568-860.000.

Hale Fire Pump Company: *See*—
Eberhardt, H. Alfred, 4,209,282, Cl. 417-251.000.

Hale, Gerald J.: *See*—
Gates, Willard G.; and Hale, Gerald J., 4,209,375, Cl. 204-192.00R.

Hales, Eric C., to Automotive Products Limited. Brake pressure modulating valve. 4,209,200, Cl. 303-22.00R.

Hall, Floyd V., to Liggett Group Inc. Glue transfer apparatus for cigarette filters. 4,208,956, Cl. 93-77.0FT.

Hall, H. Hedley; and Spector, George. Roach trap. 4,208,828, Cl. 43-114.000.

Hall, Iris H.: *See*—
Spielvogel, Bernard F.; Mc Phail, Andrew T.; Hall, Iris H.; Wisian-Neilson, Patty; and Hargrave, Karl D., 4,209,510, Cl. 424-148.000.

Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.

Hall, John F., to Chrysler Corporation. Exhaust seal ring. 4,209,177, Cl. 277-101.000.

Halliburton Company: *See*—
Cooper, Bob D.; Krivy, Richard L.; and Horinek, Herbert J., 4,209,278, Cl. 414-477.000.

Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; Takechi, Sadatoshi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Driving technique for electrochromic displays of the segmented type driving uncommon segment electrodes only. 4,209,770, Cl. 340-763.000.

Hamaoka, Shigeo: *See*—
Kiuchi, Mitsuyuki; Yoshida, Hirokazu; Hamaoka, Shigeo; and Wakita, Hitoshi, 4,209,683, Cl. 219-10.770.

Hameyer, Peter; and Tomczak, Theodor, to Th. Goldschmidt AG. Process for the manufacture of mixed esters from hydroxycarboxylic acids and partial glycerides of fatty acids. 4,209,451, Cl. 260-410.800.

Hamman, Lyle J., to Eaton Stamping Company. Electric motor apparatus. 4,209,723, Cl. 310-112.000.

Hammar, Walton J., to Riker Laboratories, Inc. 9-10 Ethanoanthracene derivatives. 4,209,633, Cl. 560-48.000.

Hammond, Donald J.: *See*—
Lin, Kingso C.; and Hammond, Donald J., 4,209,425, Cl. 252-510.000.

Hamon, Christian: *See*—
Le Goff, Yannick; Senes, Michel; and Hamon, Christian, 4,209,424, Cl. 252-474.000.

Hanaoka, Tadashi, to Citizen Watch Co., Ltd. Illumination device for electronic timepiece. 4,208,869, Cl. 368-84.000.

Hane, Toshioki: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.

Hans Sickinger Co.: *See*—
Pfaffle, Ernst, 4,208,750, Cl. 11-1.00A.

Hansen, James E., to Eaton Corporation. Protective control for vehicle starter and electrical systems. 4,209,816, Cl. 361-23.000.

Hanson, Edwin E., to Caterpillar Tractor Co. Nutating drive. 4,208,926, Cl. 74-191.000.

Harakon, Katsuyuki: *See*—
Yoshida, Shoji; and Harakon, Katsuyuki, 4,209,050, Cl. 152-354.00R.

Harden, David: *See*—
Torode, Allan J.; Harden, David; and Spence, John, 4,209,513, Cl. 424-228.000.

Hardt, Udo: *See*—
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,209,207, Cl. 308-9.000.

Hardy, Robert A., Jr.: *See*—
Dusza, John P.; Hardy, Robert A., Jr.; and Albright, Jay D., 4,209,621, Cl. 544-263.000.

Hargis, John A.: *See*—
Conway, Henry L.; Hargis, John A.; and Stroud, Henry J. F., 4,209,305, Cl. 48-213.000.

Hargrave, Karl D.: *See*—
Spielvogel, Bernard F.; Mc Phail, Andrew T.; Hall, Iris H.; Wisian-Neilson, Patty; and Hargrave, Karl D., 4,209,510, Cl. 424-148.000.

Harrel, Incorporated: *See*—
Harris, Holton E., 4,209,476, Cl. 264-40.400.

Harris, Holton E., to Harrel, Incorporated. Method and apparatus for fabrication of extruded articles. 4,209,476, Cl. 264-40.400.

Hart, Herbert J., to Schlumberger Technology Corporation. Methods and apparatus for selectively operating multi-charge well bore guns. 4,208,966, Cl. 102-20.000.

Hart, Radford H. Water vapor injection system. 4,208,989, Cl. 123-25.00B.

Harth, Helmut; and Becker, Dieter, to Blendax-Werke R. Schneider GmbH & Co. Toothpaste with zeolite polishing agent. 4,209,504, Cl. 424-49.000.

Hartkorn, Karl H. Microbiological method for removing pathogenic microbes and dissolved organic materials from liquids. 4,209,389, Cl. 210-11.000.

Hartwell Corporation: *See*—
Poe, L. Richard, 4,209,194, Cl. 292-341.180.

Harvey, Francis J., II; and Fey, Maurice G., to Westinghouse Electric Corp. Method for melting machine chips. 4,209,321, Cl. 75-10.00R.

Harwood, Leopold A., to RCA Corporation. Stabilized automatic brightness control network in a video signal processing system including an automatic kinescope beam current limiter. 4,209,808, Cl. 358-243.000.

Hashimoto, Kenjiro; Takagi, Shinichi; Okamoto, Harunori; and Miura, Minoru, to Mitsuboshi Belting, Ltd. Two step process for producing vulcanized rubber. 4,209,596, Cl. 525-333.000.

Hasselmann, Heinz: *See*—
Somborn, Gunter; Kluge, Johannes; Rotthaus, Dirk; Hasselmann, Heinz; and Lichtenvort, Uwe, 4,209,681, Cl. 200-157.000.

Hasselvander, Henry F.: *See*—
Schroeder, Henry G.; and Hasselvander, Henry F., 4,209,251, Cl. 355-110.000.

Haus, Artur: *See*—
Stephan, Gunter; Birmes, Hartmut; Haus, Artur; and Plaza, Erwin, 4,209,297, Cl. 8-467.000.

Hausen, Wolfgang H.: *See*—
Chang, Henry K.; and Hausen, Wolfgang H., 4,209,809, Cl. 360-53.000.

Hausheer, Lawrence B., to Corning Glass Works. Aperture mask supported by spring lugs and spring clips. 4,209,727, Cl. 313-404.000.

Hawkins, Ronald G., to Aluminum Company of America. Vibration damper for overhead conductors. 4,209,659, Cl. 174-42.000.

Hayashi, Hideaki, to Nippon Columbia Kabushikikaisha. Pick-up cartridge. 4,209,669, Cl. 179-100.41M.

Hayashi, Masao: *See*—
Noguchi, Kosaku; Yoshimura, Kiyoharu; Tanaka, Honami; and Hayashi, Masao, 4,209,382, Cl. 208-22.000.

Heckendorn, Roland; and Meier, Rene, to Ciba-Geigy Corporation. Triazole derivatives. 4,209,515, Cl. 424-248.530.

Heckendorn, Roland; and Meier, Rene, to Ciba-Geigy Corporation. Triazole derivatives. 4,209,516, Cl. 424-248.540.

Hedwin Corporation: *See*—
Speas, Charles A., 4,209,104, Cl. 220-71.000.

Heeres, Jan, to Janssen Pharmaceutica N.V. Imidazole derivatives and intermediates in their preparation. 4,209,447, Cl. 260-340.90R.

Hehl, Karl. Device for securing an apparatus in a wall. 4,209,154, Cl. 248-27.300.

Heikkila, Tauno: *See*—
Salmela, Jouko; Bergmann, Erik; and Heikkila, Tauno, 4,209,362, Cl. 162-264.000.

Heimerl, Wilfried; Schiewer, Edwin; and De, Amal K., to Gelsenberg Aktiengesellschaft. Method of preparing bodies containing radioactive substances. 4,209,421, Cl. 252-301.10W.

Heimrath, Ernst: *See*—
Bollman, Hellmuth; and Heimrath, Ernst, 4,208,957, Cl. 99-282.000.

Heino, Dean L.; and Gruben, Wayne E., to Deere & Company. Automatic electronic control for a power shift transmission. 4,208,929, Cl. 74-731.000.

Hellberg, Arne, to Hellberg Protection AB. Sliding block support. 4,209,264, Cl. 403-80.000.

Hellberg Protection AB: *See*—
Hellberg, Arne, 4,209,264, Cl. 403-80.000.

Helms, Charles R., to Container Corporation of America. Partition structure for separating grouped articles such as containers. 4,209,125, Cl. 229-15.000.

Hendricks, Charles D. Miscellaneous items carrier. 4,209,116, Cl. 224-49.000.

Hendriks, Petrus F. A. M., to Stamicarbon, B.V. Enzymatic conversion process. 4,209,591, Cl. 435-288.000.

Henkel Corporation: *See*—
Virnig, Michael J., 4,209,419, Cl. 252-182.000.

Henkel, Henry. Hydrofoil boat. 4,208,980, Cl. 114-274.000.

Hennig, Gerhard. Anus closure tampon and method of manufacture. 4,209,009, Cl. 128-1.00R.

Henning, Michael L.; and Pittman, Michael J., to Plessey Handel und Investments AG. Acoustic devices. 4,209,856, Cl. 367-87.000.

Henning, Walter: *See*—
Hahm, Gerhard H.; and Henning, Walter, 4,209,143, Cl. 242-118.110.

Henrit, Robert, to A. Zildjian Export Co., Inc. Combination drum tuning key and cymbal holder. 4,208,942, Cl. 84-421.000.

Henschel, Claude: *See*—
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,209,570, Cl. 428-606.000.

Henskens, Hubertus J. G.: *See*—
Creemers, Henricus M. J. C.; and Henskens, Hubertus J. G., 4,209,436, Cl. 260-29.7PT.

Henton, Paul V., to Emerson Electric Co. Filter drier. 4,209,401, Cl. 210-136.000.

Hercules Incorporated: *See*—
Marcot, Guy C., 4,209,412, Cl. 252-62.620.

Hermann, James R.; and Amerman, Gary S. Fisherman's pliers. 4,208,749, Cl. 7-106.000.

Hermann, Otto, to LeBlond Incorporated. Spindle control mechanism. 4,208,930, Cl. 82-28.00A.

Hermecz, Istvan: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Hermecz, Istvan; Vasvari, Lelle; and Horvath, Agnes, 4,209,622, Cl. 544-282.000.

Herout, Richard C.; and Uitti, Kenneth D., to UOP Inc. Low benzene content gasoline producing process. 4,209,383, Cl. 208-93.000.

Herrick, Carlyle S., to General Electric Company. Controlling size in Glauber's salt crystal formation. 4,209,312, Cl. 62-4.000.

Herrington, F. John; and Stein, Alvin J., to Mobil Oil Corporation. Method and apparatus for effecting uniform film thickness. 4,209,475, Cl. 264-40.100.

Hershberger, Welcome D. Fish lure apparatus. 4,208,823, Cl. 43-42.090.

Herzing, Anthony G.: *See*—
Scarpiello, Daniel A.; and Herzing, Anthony G., 4,209,547, Cl. 426-607.000.

Herzog, Horst: *See*—
Beck, Wolfgang; Herzog, Horst; and Stipsits, Gunter, 4,209,779, Cl. 340-683.000.

Hess, Fritz: *See*—
Wagner, Helmut; and Hess, Fritz, 4,209,337, Cl. 106-96.000.

Heurtel, Jean-Louis, to Saft-Societe des Accumulateurs Fixes et de Traction. Assembly of a group of electrodes and a terminal of a storage. 4,209,576, Cl. 429-161.000.

Heynau, Hans A.; and Raber, Peter E., to United Technologies Corporation. Single source aiming point locator. 4,209,255, Cl. 356-152.000.

Hickox, Richard M., to Leeds & Northrup Company. Speed of sound compensation for Doppler flowmeter. 4,208,908, Cl. 73-194.00A.

Hidalgo, Jean-Luc: *See*—
Reymond, Jean-Claude; and Hidalgo, Jean-Luc, 4,209,254, Cl. 356-152.000.

Higgins, Raymond: *See*—
Hutchings, Graham J.; and Higgins, Raymond, 4,209,423, Cl. 252-435.000.

Higgs, Robert H.: *See*—
Oven, Terence; Nicholls, John T.; and Higgs, Robert H., 4,209,199, Cl. 299-43.000.

Hilal, Mohamed A. Method and apparatus for optimizing current leads carrying varying current. 4,209,658, Cl. 174-15.0CA.

Hilfman, Lee, to UOP Inc. Hydrocarbon hydroprocessing. 4,209,384, Cl. 208-111.000.

Hillberg, Robert L., to Wildey Firearms Company, Inc. Firearm hammer blocking safety mechanism. 4,208,947, Cl. 89-148.000.

Hille, Earl A., to Libbey-Owens-Ford Company. Cleaning apparatus for conveyor rolls. 4,208,754, Cl. 15-88.000.

Hines, Clyde K., to Everett/Charles, Inc. Interchangeable test head for loaded test member. 4,209,745, Cl. 324-158.00F.

Hipko, Patrick: *See*—
Jones, John H.; and Hipko, Patrick, 4,208,819, Cl. 40-310.000.

Hiraishi, Kenji: *See*—
Kakuta, Susumu; Nukui, Katsuyoshi; and Hiraishi, Kenji, 4,209,119, Cl. 226-24.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing carboxysiloxane metal salts and hydroxybenzoic acid as PH buffer and corrosion inhibitor. 4,209,415, Cl. 252-76.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing amino silanes, amino siloxanes and a hydroxybenzoic acid. 4,209,416, Cl. 252-76.000.

Hirsch, Elder F.; and Hirsch, Ronald F. Vacuum breaker valve. 4,209,033, Cl. 137-218.000.

Hirsch, Ronald F.: *See*—
Hirsch, Elder F.; and Hirsch, Ronald F., 4,209,033, Cl. 137-218.000.

Hisamatsu, Takashi: *See*—
Inouye, Shigeharu; Shomura, Takashi; Kojima, Michio; and Hisamatsu, Takashi, 4,209,509, Cl. 424-119.000.

Hitachi Chemical Company, Ltd.: *See*—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.
Okada, Yasunori; and Fukuhara, Junzo, 4,209,438, Cl. 260-31.8XA.

Hitachi Koki Co., Ltd.: *See*—
Anzai, Masayasu; and Terashima, Isamu, 4,208,985, Cl. 118-712.000.

Hitachi, Ltd.: *See*—
Anzai, Masayasu; and Terashima, Isamu, 4,208,985, Cl. 118-712.000.
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.
Miyata, Masachika; and Amada, Eiichi, 4,209,771, Cl. 340-347.0DD.
Narita, Hiroshi; Ibamoto, Masahiko; and Toyama, Jinichi, 4,209,733, Cl. 318-345.00C.

Ho, Irving T.; and Riseman, Jacob, to International Business Machines Corporation. Method for forming a narrow dimensioned mask opening on a silicon body utilizing reactive ion etching. 4,209,349, Cl. 148-187.000.

Ho, Irving T.; and Riseman, Jacob, to International Business Machines Corporation. Method for forming diffusions having narrow dimensions utilizing reactive ion etching. 4,209,350, Cl. 148-188.000.

Hobart Corporation: *See*—
Lane, Buddy F.; and Fraula, Louis F., 4,209,343, Cl. 134-22.00C.

Hoch, Manfred: *See*—
Conseur, Joachim; and Hoch, Manfred, 4,208,928, Cl. 74-574.000.

Hochrath, Hans, to Siemens Aktiengesellschaft. Carrier frequency sound transmission system. 4,209,664, Cl. 179-2.510.

Hochtief AG Vorm. Gebr. Helfmann: *See*—
Magnus, Wolf, 4,209,338, Cl. 106-99.000.

Hoechst Aktiengesellschaft: *See*—
Billenstein, Siegfried; and Ehrl, Winfried, 4,209,456, Cl. 260-458.00F.
Ohorodnik, Alexander; Auer, Eberhard; and Gehrmann, Klaus, 4,209,460, Cl. 260-544.00Y.
Ong, Sienling; and Cuntze, Ulrich, 4,209,333, Cl. 106-25.000.
Schuierer, Erich; Bathelt, Heinrich; and Broll, Richard, 4,209,407, Cl. 252-3.000.

Hofmann, Eberhard; Schwartz, Reinhard; and Wagner, Berthold, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,208,998, Cl. 123-139.0AZ.

Hofmann, Helmut J. Cleaning apparatus for submerged surfaces. 4,208,752, Cl. 15-1.700.

Hogeman, Robert L.: *See—*
Earnhardt, Daniel E.; and Hogeman, Robert L., 4,208,772, Cl. 29-37.00R.

Hogue, Ronald D.; King, Thomas M.; and Mitchell, Robert S., to Monsanto Company. Method for corrosion inhibition. 4,209,487, Cl. 422-12.000.

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Holgado, Rosauro V.; and Rakoff, Philip, to E. F. Houghton and Co. Dual-purpose hydraulic fluid. 4,209,414, Cl. 252-75.000.

Holmes, William K., to J. I. Case Company. Expandable spreader control circuit. 4,209,195, Cl. 294-81.0SF.

Holub, Fred F.: *See—*
Betts, Joseph E.; and Holub, Fred F., 4,209,566, Cl. 428-389.000.

Homsy, Charles A. Implantable material and method of preparing same. 4,209,480, Cl. 264-108.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hosaka, Takefumi; Otaka, Shoichi; and Okura, Takao, 4,209,002, Cl. 123-32.0SP.

Honeywell Inc.: *See—*
Berardi, James A.; Chelcun, Darrell; Dressel, Lawrence J.; and Westphal, Bruce D., 4,209,840, Cl. 364-200.000.
Quarton, William T., 4,209,710, Cl. 307-66.000.

Honma, Hideo: *See—*
Noda, Shigeo; Honma, Hideo; and Kato, Sadamu, 4,209,847, Cl. 364-900.000.

Hood, Robert B.: *See—*
Krupp, David M.; and Hood, Robert B., 4,209,833, Cl. 364-569.000.

Hoog, Josef T.: *See—*
Gorin, Georges J.; and Hoog, Josef T., 4,209,357, Cl. 156-643.000.

Hooper, William H.: *See—*
Klein, Albert J.; and Hooper, William H., 4,209,326, Cl. 75-211.000.

Hopkins, Ethan C.: *See—*
Newcomb, Paul D.; Hopkins, Ethan C.; and Davignon, Paul A., 4,209,289, Cl. 425-410.000.

Hoppe, Walter, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Transmission-type charged particle beam apparatus. 4,209,698, Cl. 250-311.000.

Hopper, Everett S.; and Buffington, Robert B., to Coca-Cola Company, The. Automatic carbonation shaker. 4,208,903, Cl. 73-52.000.

Horie, Mitsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic brake system for vehicles. 4,208,880, Cl. 60-556.000.

Horie, Mitsuyuki: *See—*
Shimizu, Hidetoshi; and Horie, Mitsuyuki, 4,208,872, Cl. 60-280.000.

Horinek, Herbert J.: *See—*
Cooper, Bob D.; Krivy, Richard L.; and Horinek, Herbert J., 4,209,278, Cl. 414-477.000.

Horiuchi, Masatada: *See—*
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.

Horsma, David A.: *See—*
Diaz, Stephen H.; and Horsma, David A., 4,209,352, Cl. 156-49.000.

Horton, Richard H.; and Zdeb, John J., to United States of America, Energy. Solar central receiver heliostat reflector assembly. 4,209,236, Cl. 353-3.000.

Horvath, Agnes: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Hermecz, Istvan; Vasvari, Lelle; and Horvath, Agnes, 4,209,622, Cl. 544-282.000.

Horvath, Barbara: *See—*
Gandolfi, Maria L.; and Bonaga, Maria L., 4,209,291, Cl. 431-16.000.

Horvath, Johann, to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne. Collapsible core for casting molds. 4,209,161, Cl. 249-180.000.

Hosaka, Takefumi; Otaka, Shoichi; and Okura, Takao, to Honda Giken Kogyo Kabushiki Kaisha. Torch nozzle for internal combustion engine. 4,209,002, Cl. 123-32.0SP.

Houben, Heinz, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Centrifuge for separating massecuite. 4,209,341, Cl. 127-19.000.

Howe, Robert K.; and Liu, Kou-Chang, to Monsanto Company. 3'-(Substituted phenyl)-spiro[isobenzofuran-1(3H),5'(4'H)-isoxazol]-3-ones. 4,209,629, Cl. 548-241.000.

Hoy, Kenneth L.; Jones, Allen P.; and Knopf, Robert J., to Union Carbide Corporation. Process for producing shaped polyurethane hydrogel articles. 4,209,605, Cl. 528-54.000.

Hruza, Anne S.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,209,025, Cl. 131-17.00R.

Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.

Hse, Chung-Yun, to United States of America, Agriculture. Method of bonding particle board and the like using polyisocyanate/phenolic adhesive. 4,209,433, Cl. 260-29.300.

Hubbard, Winchester L.: *See—*
Strunk, Richard J.; Hubbard, Winchester L.; and Ma, Shih-Yu, 4,209,452, Cl. 260-429.700.

Hubsch, Gunter; and Stahlmann, Rudolf, to Dynamit Nobel Aktiengesellschaft. Projectile for practice ammunition. 4,208,968, Cl. 102-92.700.

Huchital, Gerald S., to Schlumberger Technology Corporation. Apparatus and method for determination of subsurface permittivity and conductivity. 4,209,747, Cl. 324-338.000.

Huck Manufacturing Company: *See—*
Smith, Walter J., 4,208,943, Cl. 85-7.000.

Hudson, Sharon J., Jr.: *See—*
Morse, Robert L.; and Hudson, Sharon J., Jr., 4,208,887, Cl. 62-503.000.

Hudspeth, William, to Polaroid Corporation. Adjustable photoelectric detector. 4,209,692, Cl. 250-239.000.

Huestis Machine Corp : *See—*
Dexter, Jeffrey L.; Fairweather, William E.; and Shurtleff, Harold R., 4,208,760, Cl. 15-302.000.

Hughes Aircraft Company: *See—*
Guadagnolo, Robert N., 4,209,835, Cl. 364-715.000.
Linford, Gary J.; Peressini, Eugene R.; and Sooy, Walter R., 4,209,689, Cl. 455-609.000.
Verma, Surendra, 4,209,215, Cl. 339-17.00F.

Hughes, John L. Laser radar tracking system. 4,209,253, Cl. 356-152.000.

Hughes Tool Company: *See—*
Baur, George W.; and McKee, Ross, 4,209,124, Cl. 228-182.000.

Hunt, Geoffrey H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Night vision system comprising a light source and image intensifier powered in alteration. 4,209,691, Cl. 250-213.0VT.

Hunt, James G., to Polymet Corporation. Manufacture of high performance alloy in elongated form. 4,209,122, Cl. 228-173.00E.

Hunter, Byron A., to Uniroyal, Inc. Sulfonyl carbazates. 4,209,632, Cl. 560-13.000.

Husky, Glover A., to Allied Products Corp. Field to cotton gin handling and storage systems. 4,208,856, Cl. 53-438.000.

Husky Injection Molding Systems Limited: *See—*
Rees, Herbert; and Schad, Robert D., 4,209,290, Cl. 425-547.000.

Hussey, Dennis M., to Haigh Engineering Company Limited, The. Pressure switch actuator. 4,209,678, Cl. 200-81.00R.

Hutchings, Graham J.; and Higgins, Raymond, to Imperial Chemical Industries Limited. Production of acid anhydrides and catalysts therefor. 4,209,423, Cl. 252-435.000.

Hyatt, Gilbert P. Method and apparatus for signal enhancement with improved digital filtering. 4,209,843, Cl. 364-724.000.

Hyatt, Gilbert P. Signal processing and memory arrangement. 4,209,852, Cl. 365-222.000.

Hyatt, Gilbert P. Holographic system for object location and identification. 4,209,853, Cl. 367-8.000.

HydroTech International, Inc.: *See—*
Billingsley, Lloyd E., 4,209,270, Cl. 405-195.000.

I.S. C. Chemicals Limited: *See—*
Fuller, George, 4,209,457, Cl. 260-465.00G.

Iatron Laboratories, Inc.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, 4,209,459, Cl. 260-507.00R.

Ibamoto, Masahiko: *See—*
Narita, Hiroshi; Ibamoto, Masahiko; and Toyama, Jinichi, 4,209,733, Cl. 318-345.00C.

Ichikawa, Yataro; Yamaji, Teizo; and Yamamoto, Mamoru, to Teijin Limited. Allyl acetyl derivatives of β, γ-unsaturated aldehyde. 4,209,644, Cl. 568-596.000.

Ignatiev, Vladimir V.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.

Ii, Motohiko; Goto, Yoshio; Suzuki, Takashi; and Kubo, Sotoo, to Kurita Water Industries Ltd.; and Sanyo Chemical Industries, Ltd. Water treating process. 4,209,398, Cl. 210-58.000.

Iida, Takao: *See—*
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.

Iida, Tatsuo: *See—*
Kobayashi, Nobumitsu; and Iida, Tatsuo, 4,209,821, Cl. 361-341.000.

Ikeda, Sakuji; and Soga, Kazuo, to Tokyo Institute of Technology. Process for preparing 2-oxazolidone and its derivatives. 4,209,628, Cl. 548-229.000.

Ikeda, Tsuneo; and Tonomura, Kenichi. Video signal processing circuit including lock-out prevention means for the intermediate frequency amplifier thereof. 4,209,805, Cl. 358-175.000.

Ikegami, Seiichi, to Kubota, Ltd. Drive mechanism for a four-wheel-driving tractor. 4,208,923, Cl. 74-15.630.

Imperial Chemical Industries Limited: *See—*
Coffee, Ronald A., 4,209,134, Cl. 239-690.000.
Edwards, Harry, 4,209,557, Cl. 427-373.000.
Hutchings, Graham J.; and Higgins, Raymond, 4,209,423, Cl. 252-435.000.
Whittam, Thomas V., 4,209,498, Cl. 423-328.000.

Inai, Nobuhiko; and Miura, Akihiko, to Tokyo Shibaura Electric Co., Ltd. Apparatus for immersion-cooling superconductor. 4,209,657, Cl. 174-15.0CA.

Inami, Yasuhiko: *See*—
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; Takechi, Sadatoshi; and Uede, Hisashi, 4,209,770, Cl. 340-763.000.
Indian Head Inc.: *See*—
Pate, Harold T.; and Wozniak, Glenn A., 4,209,661, Cl. 174-65.00R.
Industrial Hygiene Specialties: *See*—
Baldeck, Charles M., 4,208,912, Cl. 73-421.50R.
Industrial Insulations, Inc.: *See*—
Frahme, Carl E.; and Wygant, Gary E., 4,209,295, Cl. 432-247.000.
Industrie Pirelli S.p.A.: *See*—
Colombani, Bruno, 4,209,353, Cl. 156-136.000.
Infanzon, Luis A. S.: *See*—
Nogueira, Eduardo D.; Infanzon, Luis A. S.; and Tezanos, Enrique H., 4,209,370, Cl. 204-99.000.
Ingham, John D.: *See*—
Kalvinskas, John J.; Mueller, William A.; and Ingham, John D., 4,209,393, Cl. 210-40.000.
Innovative Technology Inc.: *See*—
Schroeder, Henry G.; and Hasselvander, Henry F., 4,209,251, Cl. 355-110.000.
Inoue, Nobuo: *See*—
Takahara, Takeshi; Matsuura, Susumu; Nishimura, Toshio; and Inoue, Nobuo, 4,209,567, Cl. 428-403.000.
Inouye, Shigeharu; Shomura, Takashi; Kojima, Michio; and Hisamatsu, Takashi, to Meiji Seika Kaisha Ltd. Substance SF-1739 derivatives, process for preparing the same and antibacterial compositions containing the same. 4,209,509, Cl. 424-119.000.
Institut National des Industries Extractives: *See*—
Ledent, Pierre, 4,209,065, Cl. 166-64.000.
Institute of Gas Technology: *See*—
Duncan, Dennis A.; and Dirksen, Henry A., 4,209,490, Cl. 422-109.000.
International Business Machines Corporation: *See*—
Bederman, Seymour, 4,209,839, Cl. 364-200.000.
Berger, David A.; and Welch, John W., 4,209,845, Cl. 364-900.000.
Braun, Roland J.; and Carden, Gary R., 4,209,848, Cl. 365-2.000.
Chang, Henry K.; and Hausen, Wolfgang H., 4,209,809, Cl. 360-53.000.
Clark, Gary A.; and Queener, Carl A., 4,209,249, Cl. 355-14.00R.
Gibson, David K.; and Jones, Rick O., 4,209,248, Cl. 355-8.000.
Haas, Robert G.; and Lent, Charles V., 4,209,129, Cl. 234-108.000.
Ho, Irving T.; and Riseman, Jacob, 4,209,349, Cl. 148-187.000.
Ho, Irving T.; and Riseman, Jacob, 4,209,350, Cl. 148-188.000.
International Drum Corporation: *See*—
Chase, William L., 4,208,954, Cl. 93-36.00M.
International Flavors & Fragrances Inc.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,209,543, Cl. 426-538.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,209,025, Cl. 131-17.00R.
International Paper Company: *See*—
Sethy, Anil, 4,209,359, Cl. 162-29.000.
International Telephone and Telegraph Corporation: *See*—
Rabow, Gerald, 4,209,834, Cl. 364-604.000.
Interstate Electronics Corp.: *See*—
Roberts, Liona R., Jr., 4,208,906, Cl. 73-155.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,209,588, Cl. 435-78.000.
Ionescu, Alexandru D., to New England Machinery, Inc. Bottle conveying and cleaning apparatus. 4,208,761, Cl. 15-304.000.
Irani, Mazin R.; and Darragh, Kirk V., to Stauffer Chemical Company. Preparation of detergent grade sodium tripolyphosphate from wet process phosphoric acid and soda ash. 4,209,497, Cl. 423-315.000.
Ishida, Hitoshi: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.
Ishido, Takanobu: *See*—
Ozaki, Yoshihiro; Kuniyoshi, Masayuki; Ishido, Takanobu; Kaneko, Shuichiro; and Omata, Yasukuni, 4,209,365, Cl. 204-14.00N.
Ishii, Shinzo: *See*—
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.
Ito, Shunji: *See*—
Kajinaga, Yoshihiro; Nitta, Minoru; Sakurada, Ichio; and Ito, Shunji, 4,209,320, Cl. 75-0.5BA.
Itoh, Akio: *See*—
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, ituji, 4,209,601, Cl. 526-114.000.
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, Mituji, 4,209,602, Cl. 526-114.000.
Ivie, Terry L. Fuel injection systems. 4,209,000, Cl. 123-198.0DB.
Iwahara, Makoto, to Victor Company of Japan, Limited. Audio signal translation for loudspeaker and headphone sound reproduction. 4,209,665, Cl. 179-1.00G.
Iwanami, Takefumi: *See*—
Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, 4,209,508, Cl. 424-117.000.
J. D. Moller Optische Werke GmbH: *See*—
Warming, Nils, 4,209,021, Cl. 128-652.000.
J. I. Case Company: *See*—
Gaura, Charles F.; Volkman, John C.; and Cramlet, Charles, 4,208,847, Cl. 52-118.000.
Holmes, William K., 4,209,195, Cl. 294-81.0SF.
Schuck, Paul R., 4,209,071, Cl. 180-6.480.
West, Donald J., 4,208,816, Cl. 37-141.00R.
J. P. Burroughs & Son, Inc.: *See*—
Wood, Michael J., 4,209,537, Cl. 426-233.000.
Jack, Alexander G.; Baeten, Franciscus N. C.; and van de Bilt, Johannes, to U.S. Philips Corporation. Low-pressure sodium vapor discharge lamp. 4,209,726, Cl. 313-174.000.
Jackson & Perkins Co.: *See*—
Jones, Roy, 4,209,092, Cl. 206-423.000.
Jacobs, Martin; and Roccatagliata, Raul J., to Combustion Engineering, Inc. Antivibration spacer tube. 4,208,988, Cl. 122-510.000.
Jacques, Andre: *See*—
Dubos, Jacques; and Jacques, Andre, 4,209,227, Cl. 350-96.220.
Jaedicke, Hagen; and Paust, Joachim, to BASK Aktiengesellschaft. Introduction of a carbonyl group into a cyclohexene ring. 4,209,450, Cl. 260-410.000.
Jahns, Hans O.; and Wheeler, Joe D., to Exxon Production Research Company. Icebreaking apparatus. 4,208,977, Cl. 114-40.000.
Jaje, Thomas: *See*—
Coha, Thomas F.; Klinck, Michael P.; and Jaje, Thomas, 4,208,981, Cl. 116-28.100.
James, Randall P.; and Schmidt, David C. System for making multiple original holograms or copies of a hologram and method. 4,209,250, Cl. 355-18.000.
Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,209,607, Cl. 528-291.000.
Janicki, Jan: *See*—
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.
Jansen, Patrick W. Arm wrestling apparatus. 4,209,167, Cl. 272-67.000.
Janssen Pharmaceutica N.V.: *See*—
Heeres, Jan, 4,209,447, Cl. 260-340.90R.
Janssen, Wilhelm; Vopel, Karl-Heinrich; and Meyer, Gunter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for processing dust-like matter from metallurgical waste gases. 4,209,322, Cl. 75-25.000.
Jard, Inc.: *See*—
Rollins, Richard L.; and Paquin, Thomas T., 4,209,815, Cl. 361-15.000.
Jasinski, Dennis N.; Shifman, Jerry; and Mather, Selwyn, to Richardson Company, The. Unitary pump packing. 4,209,285, Cl. 417-571.000.
Jauch, Kurt: *See*—
Bader, Eugen; and Jauch, Kurt, 4,208,779, Cl. 29-563.000.
Jaunich, Helmut: *See*—
Cooper, Stephen M.; Webster, Thomas H.; and Jaunich, Helmut, 4,209,325, Cl. 75-58.000.
Jay, Matthew C. Prevention of sensitization of welded-heat affected zones in structures primarily made from austenitic stainless steel. 4,209,123, Cl. 228-175.000.
Jaye, Frederick O., Jr. Apparatus for treating spent hydrochloric acid. 4,209,489, Cl. 422-106.000.
Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Safety vent. 4,208,840, Cl. 49-379.000.
Johansson, Mats S. J., to Svenska Mejerierhas Riksforening U P A. Process for the continuous production of a butter-like edible fat product. 4,209,546, Cl. 426-603.000.
John D. Hollingsworth on Wheels, Inc.: *See*—
Bonner, Alvin T., Sr., 4,208,768, Cl. 19-159.00A.
Schmolke, Karl H., 4,208,767, Cl. 19-97.000.
John, Peter: *See*—
Graf, Werner; Frey, Volker; John, Peter; and Zeller, Norbert, 4,209,454, Cl. 556-457.000.
John Wyeth & Brother Limited: *See*—
Archibald, John L.; and Ward, Terence J., 4,209,521, Cl. 424-267.000.
Johnson, Anthony: *See*—
Timmis, John P.; and Johnson, Anthony, 4,208,758, Cl. 15-250.040.
Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Shutter and trim apparatus. 4,209,243, Cl. 354-30.000.
Johnson, Michael R., to Pfizer Inc. Hexahydro-1-hydroxy-9-hydroxymethyl-3-substituted-6H-dibenzo[b,d]pyrans as analgesic agents. 4,209,520, Cl. 424-263.000.
Johnson, Roger A.; and Walseth, Timothy F., to Vanderbilt University. Enzymatic process for preparing [γ-^{32}P]-labeled nucleotides. 4,209,589, Cl. 435-90.000.
Johnson, Wayne O., to Rohm and Haas Company. Herbicidal esters of 4-trifluoromethyl-3-carboxamido-4-nitro diphenyl ethers. 4,209,318, Cl. 71-88.000.
Johnsson, Bo: *See*—
Wiking, Hakan; and Johnsson, Bo, 4,209,060, Cl. 165-8.000.

Johnston, Robert G.: *See*—
Hagenbach, Robert J.; and Johnston, Robert G., 4,209,550, Cl. 427-27.000.

Joko, Kazuo: *See*—
Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, 4,209,508, Cl. 424-117.000.

Jones, Allen, Jr. Steering and stabilization apparatus for aerial missile. 4,209,147, Cl. 244-3.280.

Jones, Allen P.: *See*—
Hoy, Kenneth L.; Jones, Allen P.; and Knopf, Robert J., 4,209,605, Cl. 528-54.000.

Jones, Brian G.; and Brown, Barry, to Twil Handling Systems Limited. Load carrying pallets. 4,209,183, Cl. 280-79.300.

Jones Dairy Farm: *See*—
Jones, Edward C., Jr., 4,209,540, Cl. 426-414.000.

Jones, Edward C., Jr., to Jones Dairy Farm. Method for straightening sausage links. 4,209,540, Cl. 426-414.000.

Jones, James J., to Texas Instruments Incorporated. Automatically adjustable switching circuit for a skid control system. 4,209,202, Cl. 303-106.000.

Jones, John H.; and Hipko, Patrick, to Beatrice Foods Co. Bottle-engaging information piece. 4,208,819, Cl. 40-310.000.

Jones, Rick O.: *See*—
Gibson, David K.; and Jones, Rick O., 4,209,248, Cl. 355-8.000.

Jones, Roy, to Jackson & Perkins Co. Plant container. 4,209,092, Cl. 206-423.000.

Joseph, Douglas C., to Eastman Kodak Company. Manufacture of photographic elements having anticurl and antistatic layers. 4,209,584, Cl. 430-527.000.

Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, to Richter Gedeon Vegyeszeti Gyar Rt. Process for separating pharmaceutically active diindole alkaloids. 4,209,443, Cl. 260-244.400.

Juby, Peter F., to Bristol-Myers Company. Substituted 3-(1H-tetrazol-5-yl)-4H-pyrido[1,2-a]pyrimidin-4-one derivatives having antiallergy activity. 4,209,620, Cl. 544-252.000.

Juby, Peter F., to Bristol-Myers Company. Pyrimidine-5-N-(1H-tetrazol-5-yl)-carboxamides. 4,209,623, Cl. 544-319.000.

Jung, Friedrich, to Triumph Werke Nurnberg, A.G. Wire matrix print head having reversible wire drive armatures to allow wire wear compensation. 4,209,260, Cl. 400-53.000.

Junowicz, Enrique. Display with overlapping picture elements. 4,208,811, Cl. 35-27.000.

Kabushiki Kaisha Akashi Seisakusho: *See*—
Shirai, Shogo; and Onoguchi, Akira, 4,209,702, Cl. 250-396.0ML.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kondo, Yoh-ichi, 4,208,938, Cl. 84-1.030.

Kabushiki Kaisha Miura Kumihimo Kojyo: *See*—
Taki, Kiyoji, 4,209,044, Cl. 139-411.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Sugai, Hiroshi; and Nakayama, Shoji, 4,209,293, Cl. 433-132.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,208,964, Cl. 101-291.000.

Kabushiki Kaisha Takenaka Doboku: *See*—
Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, 4,209,335, Cl. 106-89.000.

Kabushiki Kaisha Takenaka Komuten: *See*—
Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, 4,209,335, Cl. 106-89.000.

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Aoyama, Shigetsune; and Asai, Kiyokazu, 4,208,917, Cl. 73-644.000.

Kaes, Gunter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Tube stranding machine. 4,208,864, Cl. 57-58.340.

Kajinaga, Yoshihiro; Nitta, Minoru; Sakurada, Ichio; and Ito, Shunji, to Kawasaki Steel Corporation. Process for producing low-oxygen iron-base metallic powder. 4,209,320, Cl. 75-0.5BA.

Kakinuma, Akio: *See*—
Oya, Hiroo; and Kakinuma, Akio, 4,209,494, Cl. 422-179.000.

Kakuta, Susumu; Nukui, Katsuyoshi; and Hiraishi, Kenji, to Nippon Columbia Kabushikikaisha. Tape drive control apparatus. 4,209,119, Cl. 226-24.000.

Kalvinskas, John J.; Mueller, William A.; and Ingham, John D., to California Institute of Technology. Sewage sludge additive. 4,209,393, Cl. 210-40.000.

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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.

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Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Nazarov, Boris V., 4,209,070, Cl. 173-78.000.

Kamoda, Hitoshi: *See*—
Pu, Lyong S.; and Kamoda, Hitoshi, 4,209,579, Cl. 430-78.000.

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Munekata, Seiji; Ukihashi, Hiroshi; Yamabe, Masaaki; and Kaneko, Isamu, 4,209,635, Cl. 560-183.000.

Kaneko, Shuichiro: *See*—
Ozaki, Yoshihiro; Kuniyoshi, Masayuki; Ishido, Takanobu; Kaneko, Shuichiro; and Omata, Yasukuni, 4,209,365, Cl. 204-14.00N.

Kankaanpaa, Matti, to Valmet Oy. Method of multi-nip pressing in a paper machine. 4,209,361, Cl. 162-205.000.

Karlsson, Jarding U., to ABU Aktiebolag. Centrifugal brake in multiplier fishing reels. 4,209,141, Cl. 242-84.52C.

Karmazin Products Corporation: *See*—
Woodhull, Ivan D., Jr., 4,209,062, Cl. 165-38.000.

Karpati, Egon: *See*—
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.

Karyshev, Vitaly D.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.

Kashden, R. Paul, to Closet Systems Corp. Swingable hanger support member. 4,209,156, Cl. 248-289.00R.

Kashiro, Yoshikazu; Matsugasako, Kenji; and Kataoka, Shunro, to Toray Industries, Inc. Process for producing an anisotropically electroconductive sheet. 4,209,481, Cl. 264-24.000.

Kasik, Robert L.: *See*—
Zavagli, Steven B.; and Kasik, Robert L., 4,209,544, Cl. 426-580.000.

Kasper, Robin: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.

Kasuga, Osamu: *See*—
Yutaka, Jin; Kasuga, Osamu; and Kyuzaki, Tsutomu, 4,209,756, Cl. 333-1.100.

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Kashiro, Yoshikazu; Matsugasako, Kenji; and Kataoka, Shunro, 4,209,481, Cl. 264-24.000.

Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, to Kabushiki Kaisha Takenaka Komuten; and Kabushiki Kaisha Takenaka Doboku. Method and composition, including particular additive for hydraulic cement, for fixing waste matter. 4,209,335, Cl. 106-89.000.

Kato, Sadamu: *See*—
Noda, Shigeo; Honma, Hideo; and Kato, Sadamu, 4,209,847, Cl. 364-900.000.

Kato, Shogo: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,209,242, Cl. 354-25.000.

Katsuki, Marefumi: *See*—
Shiki, Haruo; Saito, Yoshiteru; Katsuki, Marefumi; and Wakino, Kikuo, 4,209,754, Cl. 330-307.000.

Kattner, Erich, to Siemens Aktiengesellschaft. Nozzle plate for an ink recording device. 4,209,794, Cl. 346-140.00R.

Katzke, Ernest F.; and Lindquist, Dennis E., to Crane Packing Co. Dual surface lapping machine. 4,208,842, Cl. 51-111.00R.

Kaufman, Beverly F. Electrically illuminated book. 4,209,824, Cl. 362-98.000.

Kawasaki, Masahiro; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Long time exposure preventing device for camera with electronic flash. 4,209,245, Cl. 354-51.000.

Kawasaki Steel Corporation: *See*—
Kajinaga, Yoshihiro; Nitta, Minoru; Sakurada, Ichio; and Ito, Shunji, 4,209,320, Cl. 75-0.5BA.

Kawashima, Kazumi; and Koyanagi, Yukio, to Matsushita Electric Industrial Co., Ltd. D-A Converter utilizing a main and auxiliary pulse generator to control the duty factor of an averaged pulse train signal. 4,209,775, Cl. 340-347.0DA.

Kazintsev, Nikolai V.: *See*—
Tkachev, Valentin N.; Fishtein, Boris M.; Vlasenko, Viktor D.; and Kazintsev, Nikolai V., 4,209,057, Cl. 164-51.000.

Kelch, Heinz, to Kienzle Apparate GmbH. Electronic taximeter assembly. 4,209,688, Cl. 235-30.00R.

Kelland, David R., to Massachusetts Institute of Technology. Magnetic separator having a multilayer matrix, method and apparatus. 4,209,394, Cl. 210-42.00S.

Keller, Frank R.: *See*—
Rundel, Morton S.; Keller, Frank R.; and Moritz, Peter M., 4,209,820, Cl. 361-331.000.

Keller, Teddy M.; and Griffith, James R., to United States of America, Navy. Fluorinated phthalonitriles. 4,209,458, Cl. 260-465.00F.

Kelly, John, Jr., to Mobil Oil Corporation. Method and apparatus for treating drill cuttings at an onsite location. 4,209,381, Cl. 208-8.0LE.

Kelly, Robert C., to Upjohn Company, The. Phenyl-substituted 9-deoxy-6,9α-epoxymethano-PG analogs. 4,209,615, Cl. 542-426.000.

Kendall Company, The: *See*—
Layton, Terry N., 4,209,023, Cl. 128-748.000.
Ward, Bruce D.; and Perlin, Alfred R., 4,209,010, Cl. 128-1.00R.

Kennedy, Melvin, to Nagel/Kennedy & Associates. Toy baseball. pitching machine. 4,209,004, Cl. 124-7.000.

Kennis, Lucas L. Steering column coupling device. 4,208,927, Cl. 74-493.000.

Kent, Peter J. C.; and Page, John K. R., to Calor Group Limited, The. Thermal energy storage material. 4,209,413, Cl. 252-70.000.

Kep Enterprises: *See*—
Poggemiller, Erhard; and Sweet, Ralph W., 4,209,067, Cl. 172-190.000.

Kepco, Inc.: *See*—
Riley, John, 4,209,753, Cl. 330-51.000.

Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See*—
Naefe, Paul, 4,209,492, Cl. 422-159.000.

Kessler, Richard V.; and Nolan, John T., Jr., to Texaco Inc. Coal gasification-method of feeding dry coal. 4,209,304, Cl. 48-202.000.

Kewanee Industries: *See*—
Green, Harold A.; Merianos, John J.; Petrocci, Alfonso N.; and Weinstein, Morris, 4,209,397, Cl. 210-54.000.

Key Tronic Corporation: *See*—
Seignemartin, Ewald E., 4,209,819, Cl. 361-288.000.

Keyes, John H. Flywheel energy accumulator. 4,208,921, Cl. 74-572.000.

Khanna, Som N., to Uniroyal Ltd. Semi-flexible shock-absorbing polyurethane foam prepared from a triol, a compound having a single reactive hydrogen, an aromatic polyisocyanate, blowing agent, chain-extender and a catalyst. 4,209,593, Cl. 521-163.000.

Khapaev, Vadim M. Method of breaking down emulsions and a device for carrying same into effect. 4,209,127, Cl. 233-3.000.

Kienzle Apparate GmbH: *See*—
Kelch, Heinz, 4,209,688, Cl. 235-30.00R.

Killop, James T., to Anderson-Cook, Inc. Burnishing rack. 4,208,773, Cl. 29-90.00B.

Kim, Bang M.; Quinn, John A.; and Graves, David J., to Air Products and Chemicals, Inc. Gas concentration analysis method and system. 4,208,902, Cl. 73-19.000.

Kim, Joo B. Twist drill. 4,209,275, Cl. 408-211.000.

Kimoto, Kyoji: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.

Kimura, Akio: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.

Kincel, Roger S., to BASF Aktiengesellschaft. Method for placing and securing magnets in a motor housing. 4,208,784, Cl. 29-596.000.

Kindl, George F.: *See*—
Michaud, Orean E.; and Kindl, George F., 4,208,796, Cl. 33-143.00L.

King, Roger A. Solar energy recharger. 4,209,346, Cl. 136-89.0PC.

King, Thomas M.: *See*—
Hogue, Ronald D.; King, Thomas M.; and Mitchell, Robert S., 4,209,487, Cl. 422-12.000.

Kinnamon, Kenneth E., to United States of America, Army. Anti-leishmanial lepidine derivatives. 4,209,519, Cl. 424-258.000.

Kinosz, Donald L.: *See*—
Carpenter, L. Graydon; Kinosz, Donald L.; and Cedro, Vito, III, 4,209,496, Cl. 423-210.000.

Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Angiotensin II analogs and process for the preparation thereof. 4,209,442, Cl. 260-112.50R.

Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, to Seiko Koki Kabushiki Kaisha. Exposure control device for automatic focusing camera. 4,209,242, Cl. 354-25.000.

Kitamura, Kazuhiko, to Aisin Seiki Kabushiki Kaisha. Thermally responsive valve. 4,208,994, Cl. 123-119.00A.

Kitamura, Sadafumi: *See*—
Yamamitsu, Chojuro; Kitamura, Sadafumi; and Miyamoto, Akira, 4,209,800, Cl. 358-8.000.

Kitawaki, Tokuzo: *See*—
Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, 4,209,335, Cl. 106-89.000.

Kiuchi, Mitsuyuki; Yoshida, Hirokazu; Hamaoka, Shigeo; and Wakita, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Load responsive trigger interval control for induction heating apparatus having inversely parallel connected thyristors. 4,209,683, Cl. 219-10.770.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,209,543, Cl. 426-538.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.

Kiyohara, Takao: *See*—
Atsumi, Toshio; Tarumi, Yuzo; and Kiyohara, Takao, 4,209,525, Cl. 424-273.00R.
Ogino, Shigeo; Yoshida, Noboru; and Kiyohara, Takao, 4,209,507, Cl. 424-116.000.

Klapper, Jacob: *See*—
Freitas, Manuel P.; and Klapper, Jacob, 4,209,750, Cl. 455-63.000.

Klaubert, Dieter H.: *See*—
Sellstedt, John H.; Guinosso, Charles J.; Klaubert, Dieter H.; and Shriver, David A., 4,209,528, Cl. 424-304.000.

Klegraf, Ferdinand: *See*—
Berlenbach, Norbert; and Klegraf, Ferdinand, 4,209,395, Cl. 210-46.000.

Klein, Albert J.; and Hooper, William H., to American Can Company. Method for producing metal powder having rapid sintering characteristics. 4,209,326, Cl. 75-211.000.

Klein, Herbert S. Display package. 4,209,090, Cl. 206-45.280.

Klein, Keith W.; and Palmieri, Joseph M., to General Electric Company. Circuit breaker auxiliary switch apparatus. 4,209,761, Cl. 335-17.000.

Klein, Norman S., to RCA Corporation. Mounting for solar cell. 4,209,347, Cl. 136-89.0PC.

Kleine, Ewald; and Roth, Ernst, to Siegenia-Frank KG. Latch hardware. 4,208,838, Cl. 49-192.000.

Klemundt, Marshall: *See*—
Fogg, Daniel A.; Brandt, Maurice W.; and Klemundt, Marshall, 4,209,802, Cl. 358-106.000.

Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of benzoyl cyanide (I). 4,209,461, Cl. 260-545.00R.

Klinck, Michael P.: *See*—
Coha, Thomas F.; Klinck, Michael P.; and Jaje, Thomas, 4,208,981, Cl. 116-28.100.

Kljuev, Vladimir V.: *See*—
Gerasimov, Viktor G.; Kljuev, Vladimir V.; Kuznetsov, Viktor B.; Kurozaev, Viktor P.; Rogachev, Viktor I.; Sukhorukov, Vasily V.; Ulitin, Jury M.; and Fedosenko, Jury K., 4,209,744, Cl. 324-241.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Deussner, Herbert, 4,209,296, Cl. 432-14.000.

Kloeber, Peter: *See*—
Becker, Friedbert; Kloeber, Peter; and Steinkamp, Johann A., 4,209,749, Cl. 455-56.000.

Kluge, Johannes: *See*—
Somborn, Gunter; Kluge, Johannes; Rotthaus, Dirk; Hasselmann, Heinz; and Lichtenvort, Uwe, 4,209,681, Cl. 200-157.000.

Knapek, Erwin: *See*—
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.

Knight, Houston W., to FMC Corporation. Fluid transfer adapter for connecting a single conduit to a plurality of tanker manifolds. 4,209,192, Cl. 285-178.000.

Knoll, Jozsef: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Hermecz, Istvan; Vasvari, Lelle; and Horvath, Agnes, 4,209,622, Cl. 544-282.000.

Knopf, Franz: *See*—
Eichler, Helmut; and Knopf, Franz, 4,208,965, Cl. 101-426.000.

Knopf, Robert J.: *See*—
Hoy, Kenneth L.; Jones, Allen P.; and Knopf, Robert J., 4,209,605, Cl. 528-54.000.

Knowlton, Kenneth C., to Bell Telephone Laboratories, Incorporated. Digital circuits having nonlinear output versus input characteristics. 4,209,842, Cl. 364-718.000.

Koa Oil Co., Ltd.: *See*—
Noguchi, Kosaku; Yoshimura, Kiyoharu; Tanaka, Honami; and Hayashi, Masao, 4,209,382, Cl. 208-22.000.

Kobayashi, Kazuo: *See*—
Nomura, Takao; Taguchi, Yoshio; Kobayashi, Kazuo; and Sakata, Isao, 4,209,564, Cl. 428-315.000.

Kobayashi, Nobumitsu; and Iida, Tatsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Multi-breaker type gas-insulated switchgear. 4,209,821, Cl. 361-341.000.

Kobayashi, Ryuichiro: *See*—
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.

Kobayashi, Takumi: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.

Kobayashi, Toshihiko; and Michioka, Hirohumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalytic converter system for an internal combustion engine. 4,209,495, Cl. 422-176.000.

Kobylinski, Thaddeus P.: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,209,465, Cl. 568-385.000.

Koch, Karl H.: *See*—
Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, 4,209,323, Cl. 75-48.000.

Kodama, Osamu: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, 4,209,459, Cl. 260-507.00R.

Koella, Ernest, III, to Zinser Textilmaschinen GmbH. Method and means for clearing yarn underwindings from textile spindle assemblies. 4,208,865, Cl. 57-303.000.

Kofstad, Myron L.: *See*—
Roll, Dwight M.; Kofstad, Myron L.; and Habstritt, Charles H., 4,208,835, Cl. 47-1.500.

Kohl, Richard C. Decorative system. 4,208,848, Cl. 52-171.000.

Kohler, Werner: *See*—
Muller, Bruno; Baumgartl, Ulrich; and Kohler, Werner, 4,209,743, Cl. 324-96.000.

Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, to Hitachi, Ltd. Solid-state imaging device. 4,209,806, Cl. 358-213.000.

Kojima, Hidetaka; Oda, Shingo; Yokoyama, Takushi; and Murakami, Yasukazu, to Daicel Ltd. Hydroformylation process. 4,209,467, Cl. 260-340.700.

Kojima, Michio: *See*—
Inouye, Shigeharu; Shomura, Takashi; Kojima, Michio; and Hisamatsu, Takashi, 4,209,509, Cl. 424-119.000.
Kollmar, Friedrich, to Moog GmbH. Control system for a hydraulic press. 4,208,935, Cl. 83-617.000.
Konan Camera Research Institute: *See*—
Abe, Kumiomi; and Fiujita, Susumu, 4,209,225, Cl. 350-46.000.
Kondo, Shiro, to Alps Electric Co., Ltd. Piano switch. 4,209,674, Cl. 200-16.00R.
Kondo, Yoh-ichi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Random rhythm pattern generator. 4,208,938, Cl. 84-1.030.
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, to Hitachi Chemical Company, Ltd. Process for producing internally plasticized phenolic resins. 4,209,429, Cl. 260-19.00R.
Konishiroku Photo Industry Co., Ltd.: *See*—
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.
Konrath, Karl, to Robert Bosch GmbH. RPM regulator for fuel injection pumps. 4,208,999, Cl. 123-140.00R.
Konsevich, James L.: *See*—
Alcorn, Thomas E., Jr.; and Konsevich, James L., 4,209,838, Cl. 364-200.000.
Koppers Company, Inc.: *See*—
Day, John T., 4,209,089, Cl. 198-847.000.
Koppl, Georg; Pedrini, Giovanni; and Widmer, Hans, to BBC Brown Boveri & Company Limited. Electrical switch. 4,209,679, Cl. 200-148.00A.
Kosten, Richard B.; and Folgmann, Helmut G., to GTE Automatic Electric Laboratories Incorporated. Insulated electrical conductor locking arrangement and method. 4,209,218, Cl. 339-97.00R.
Kotobuki Seiyaku Company Limited: *See*—
Tomiyama, Tsuyoshi, 4,209,529, Cl. 424-312.000.
Koyanagi, Yukio: *See*—
Kawashima, Kazumi; and Koyanagi, Yukio, 4,209,775, Cl. 340-347.0DA.
Kozan, Eileen N. Portable recreational product assembly. 4,209,085, Cl. 190-51.000.
Kozlov, Alexandr N.: *See*—
Abramov, Jury M.; Kozlov, Alexandr N.; and Sinelnikova, Svetlana E., 4,209,746, Cl. 324-301.000.
Kraft, Inc.: *See*—
Collins, Truman F., 4,208,931, Cl. 83-44.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Beck, Wolfgang; Herzog, Horst; and Stipsits, Gunter, 4,209,779, Cl. 340-683.000.
Kralik, Andrew J.: *See*—
Dimarco, Bernard; Kralik, Andrew J.; and Perkins, Norman P., Jr., 4,209,760, Cl. 335-17.000.
Kramer, L. Jonathan: *See*—
Maltby, Frederick L.; and Kramer, L. Jonathan, 4,208,909, Cl. 73-304.00C.
Kramer, Siegfried. Jardiniere and method of making same. 4,208,836, Cl. 47-72.000.
Kreuser, Michael L.: *See*—
Stites, David G.; Flint, John R.; and Kreuser, Michael L., 4,209,238, Cl. 353-85.000.
Krimmel, Eberhard F., to Siemens Aktiengesellschaft. Tandem ion acceleration having a matter-free ion charge reversed zone. 4,209,704, Cl. 250-423.00R.
Krivy, Richard L.: *See*—
Cooper, Bob D.; Krivy, Richard L.; and Horinek, Herbert J., 4,209,278, Cl. 414-477.000.
Kruesi, Paul R., to Cato Research Corporation. Chlorides of lead, zinc, copper, silver and gold. 4,209,501, Cl. 423-491.000.
Krug, Guter: *See*—
Lahr, Helfried; and Krug, Guter, 4,209,399, Cl. 210-59.000.
Krupp, David M.; and Hood, Robert B., to Fairchild Camera and Instrument Corporation. Electronic control system. 4,209,833, Cl. 364-569.000.
Kubo, Masaharu: *See*—
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.
Kubo, Sotoo: *See*—
Ii, Motohiko; Goto, Yoshio; Suzuki, Takashi; and Kubo, Sotoo, 4,209,398, Cl. 210-58.000.
Kubota, Hirosuke: *See*—
Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, 4,209,335, Cl. 106-89.000.
Kubota, Ltd.: *See*—
Ikegami, Seiichi, 4,208,923, Cl. 74-15.630.
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., to MacDermid Incorporated. Electroless copper composition solution using a hypophosphite reducing agent. 4,209,331, Cl. 106-1.230.
Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; and Mallon, Joseph R., 4,208,782, Cl. 29-580.000.
Kulka, Raymond P.: *See*—
Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., 4,208,976, Cl. 113-121.00A.
Kumagai, Hiroji: *See*—
Masaki, Tatsuo; Miyajima, Keiji; Fukuyoshi, Kenzo; and Kumagai, Hiroji, 4,209,551, Cl. 427-68.000.
Kumai, Teruo: *See*—
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Kumakawa, Shiro: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Kuna, Wayne A., to Marvin Glass & Associates. Liquid ejecting toy. 4,209,113, Cl. 222-79.000.
Kuna, Wayne A.: *See*—
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Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Teetz, Wolfgang, 4,208,975, Cl. 112-86.000.
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Kelland, David R., 4,209,394, Cl. 210-42.00S.
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Kashiro, Yoshikazu; Matsugasako, Kenji; and Kataoka, Shunro, 4,209,481, Cl. 264-24.000.

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Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, 4,209,797, Cl. 357-42.000.

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Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,378, Cl. 204-195.00S.
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Arita, Hachiro, 4,209,807, Cl. 358-237.000.
Kawashima, Kazumi; and Koyanagi, Yukio, 4,209,775, Cl. 340-347.0DA.
Kiuchi, Mitsuyuki; Yoshida, Hirokazu; Hamaoka, Shigeo; and Wakita, Hitoshi, 4,209,683, Cl. 219-10.770.
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Matyas, Tibor, to Evans Products Company. Movable lading bracing stanchions for freight cars. 4,208,970, Cl. 410-153.000.

Maudlin, Wendell E., to Borg-Warner Corporation. Subcooling valve for split system air conditioning apparatus with remote condensing unit. 4,208,886, Cl. 62-498.000.

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Mayes, Fred M., to Suntech, Inc. Oil spill cleanup method and apparatus. 4,209,400, Cl. 210-65.000.

Mayhew, Raymond L.; and O'Lenick, Anthony J., to Mona Industries. Phosphate quaternary compounds. 4,209,449, Cl. 260-403.000.

McAllister, Ronald L.; Priepke, Edward H.; and Wagstaff, Robert A., to Sperry Rand Corporation. Forage harvester cutterhead with baffle means. 4,209,137, Cl. 241-221.000.

McCabe, John S.; Stafford, Donald C.; and Laverman, Royce J., to Chicago Bridge & Iron Company. Storage tank with liquid insulator for storing cryogenic fluids using water displacement. 4,209,271, Cl. 405-210.000.

McCloy, Albert J.: *See*—
Cacalloro, Philip A.; McCloy, Albert J.; and Bennett, Moreland P., 4,209,064, Cl. 165-130.000.

McCombs, Russell L.; and Motsinger, James V., to Baker International Corporation. Method and apparatus for making threaded joints. 4,208,775, Cl. 29-240.000.

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McElroy, David J., to Texas Instruments Incorporated. On chip vacuum fluorescent display drive. 4,209,729, Cl. 315-169.100.

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McGinnis, James P., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,209,817, Cl. 361-94.000.

McGoldrick, Darlene M. Jewelry display housing. 4,209,212, Cl. 312-245.000.

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McKee, Ross: *See*—
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McMurtry, David R.; and Ackery, Lionel J., to Rolls-Royce Limited; and Renishaw Electrical Limited. Rotary mounting for use especially with measuring apparatus. 4,209,206, Cl. 308-9.000.

McNamee, James W.: *See*—
Chupak, John M.; Gladd, Joseph H.; and McNamee, James W., 4,209,221, Cl. 339-223.00S.

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Dutcher, Robert G.; and O'Neil, Edward G., 4,209,019, Cl. 128-419.00P.

Mehoudar, Raphael. Drip level irrigation emitter unit. 4,209,133, Cl. 239-542.000.

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Inouye, Shigeharu; Shomura, Takashi; Kojima, Michio; and Hisamatsu, Takashi, 4,209,509, Cl. 424-119.000.

Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lindenmeier, Heinz. Tissue coagulation apparatus and method. 4,209,018, Cl. 128-303.170.

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Membreno, Robert J., to Sai Engineers, Inc. Outdoor lighting system and method. 4,209,728, Cl. 315-159.000.

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Baumgarth, Manfred; Orth, Dieter; Radunz, Hans-Eckart; Lissner, Reinhard; and Maisenbacher, Jurgen, 4,209,444, Cl. 260-338.000.

Merianos, John J.: *See*—
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Merkel, Russell D., to Caterpillar Tractor Co. Router bit assembly for an earth working apparatus. 4,208,817, Cl. 37-141.00T.

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Hahm, Gerhard H.; and Henning, Walter, 4,209.143, Cl. 242-118.110.

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Apple, Charles N., Sr., 4,209,198, Cl. 297-443.000.

Meyer, Burton C.; and Kuna, Wayne A., to Marvin Glass & Associates. Drawing device. 4,209,237, Cl. 353-75.000.

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Janssen, Wilhelm; Vopel, Karl-Heinrich; and Meyer, Gunter, 4,209,322, Cl. 75-25.000.

Meyers, Edwin J.: *See*—
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Michael, Harald, to Electrolex GmbH. Backwater tank for a building connected to a vacuum drain facility. 4,209,034, Cl. 137-236.00R.

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Micucci, Joseph; and Kuras, Rudolf F., to Slater Steel Industries Limited. Method and apparatus for separating elongate elements. 4,209,277, Cl. 414-330.000.

Midori Anzen Company, Ltd.: *See*—
Rich, Edward L., III, 4,209,491, Cl. 422-110.000.

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Mikhail, Adib R. Pilocarpine mouthwash for dry mouth relief. 4,209,505, Cl. 424-54.000.
Miko, Sandor; and Mullis, Phillip R., to RCA Corporation. Magnetic switching regulator for a deflection circuit. 4,209,731, Cl. 315-400.000.
Miles, Edward J. Orbital internal combustion engine. 4,209,001, Cl. 123-242.000.
Milkovich, Ralph: *See*—
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Miller, Ralph: *See*—
Dube, James H.; and Miller, Ralph, 4,209,471, Cl. 260-990.000.
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Miller, Stanley F.: *See*—
Weinberger, Gerald J.; and Miller, Stanley F., 4,209,668, Cl. 179-90.00B.
Mills, William R., Jr., to Mobil Oil Corporation. Assaying for uranium-bearing ore. 4,209,694, Cl. 250-265.000.
Minamoto, Naoki; Oguma, Tomio; and Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Human body irrigation system. 4,208,746, Cl. 4-448.000.
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Mineral Deposits Limited: *See*—
Giffard, Philip J., 4,209,386, Cl. 209-459.000.
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Ozaki, Yoshihiro; Kuniyoshi, Masayuki; Ishido, Takanobu; Kaneko, Shuichiro; and Omata, Yasukuni, 4,209,365, Cl. 204-14.00N.
Sahara, Masayoshi; and Nakai, Masaaki, 4,209,244, Cl. 354-51.000.
Minoura, Kazuo, to Canon Kabushiki Kaisha. Scanning device. 4,209,223, Cl. 350-6.100.
Minton, Carl H. Guide roll apparatus. 4,209,118, Cl. 226-21.000.
Mitchell, Robert S.: *See*—
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Mitchell, William E., to Dunlop Limited. Tire deflation warning apparatus. 4,209,765, Cl. 340-58.000.
Mitsche, Roy T.; and Pope, George N., to UOP Inc. Olefin isomerization using an extruded alumina paste supporting a platinum group metal catalyst. 4,209,655, Cl. 585-664.000.
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Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
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Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, to Calpis Food Industry Co., Ltd., The. Antimicrobial substance C-3603 and process for preparing the same. 4,209,508, Cl. 424-117.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Masuda, Takayoshi; Takase, Tsutomu; Watanabe, Yoshimoto; and Yamazaki, Fumio, 4,209,641, Cl. 568-617.000.
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Miura, Akihiko: *See*—
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Mixan, Craig E.; and Burk, George A., to Dow Chemical Company, The. Antimicrobial bis(5-nitro-2-thiazolyl)thioisothiazoles and thiadiazoles. 4,209,522, Cl. 424-270.000.
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Miyamae, Ryuichi, to Sharp Kabushiki Kaisha. Digital pressure sensor. 4,208,918, Cl. 73-708.000.
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Miyamoto, Yukihiko, to Trio Kabushiki Kaisha. Logarithmic amplifier. 4,209,714, Cl. 307-229.000.
Miyanaga, Masaaki. Apparatus and method of forming holes in plate glass. 4,209,272, Cl. 408-1.00R.
Miyata, Masachika; and Amada, Eiichi, to Hitachi, Ltd. Code converting method and system. 4,209,771, Cl. 340-347.0DD.
Miyauchi, Hirotsugu: *See*—
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Ruehle, William H., 4,209,854, Cl. 367-43.000.
Smith, Clarence G., 4,209,855, Cl. 367-71.000.
Mocelin, Jean-Claude, to Scalaire S.A. Sun roof for cars. 4,209,196, Cl. 296-219.000.
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Moehlenpah, Walter G. Connector system for wood structures. 4,209,265, Cl. 403-230.000.
Moglia, Henry J.; and Sonnino, Carlo B., to Emerson Electric Co. Electrical resistance heater. 4,209,686, Cl. 219-375.000.
Mona Industries: *See*—
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Morawski, London T. Indexable chuck. 4,209,181, Cl. 279-5.000.
Morel, Andre, to Constructions Mecaniques F. Laroche et Fils. Breaking machine. 4,208,769, Cl. 19-204.000.
Morganroth, Shila. Hair treatment devices and packaging therefor. 4,209,027, Cl. 132-9.000.
Mori, Yukinori: *See*—
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nady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.
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Morris, John P.; and Podenski, Patrick A., to Boeing Commercial Airplane Company. Contracted inlet for jet engine being transported as cargo. 4,209,149, Cl. 244-53.00B.
Morrison, Richard L., to Teledyne Industries, Inc. Non-compromisable intrusion sensor circuit. 4,209,777, Cl. 340-547.000.
Morse, Robert L.; and Hudson, Sharon J., Jr., to Tecumseh Products Company. Suction accumulator having heat exchanger. 4,208,887, Cl. 62-503.000.
Mortensen, Harold R., to Facet Enterprises, Inc. Engine starter drive assembly with shielding means. 4,208,922, Cl. 74-7.00R.
Morton-Norwich Products, Inc.: *See—*
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Yu, Chia-Nien, 4,209,448, Cl. 260-347.800.
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Mueller, William A.: *See—*
Kalvinskas, John J.; Mueller, William A.; and Ingham, John D., 4,209,393, Cl. 210-40.000.
Muhlemann, Hans R.; Steiner, Ernesto; and Brandestini, Marco. Method of providing a living person's body with information for forensic identification. 4,208,795, Cl. 433-203.000.
Muller, Bruno; Baumgartl, Ulrich; and Kohler, Werner, to Siemens Aktiengesellschaft. Circuit arrangement for measuring currents at high potential. 4,209,743, Cl. 324-96.000.
Mullis, Phillip R.: *See—*
Miko, Sandor; and Mullis, Phillip R., 4,209,731, Cl. 315-400.000.
Munekata, Seiji; Ukihashi, Hiroshi; Yamabe, Masaaki; and Kaneko, Isamu, to Asahi Glass Company Limited. Process for producing perfluorinated vinyl ether having ester group. 4,209,635, Cl. 560-183.000.
Murakami, Tadashi: *See—*
Tomita, Kazuo; Murakami, Tadashi; Tsuji, Hideakira; Matsumoto, Keigo; Fujita, Katsuhiro; and Yokoi, Shinji, 4,209,512, Cl. 424-200.000.
Murakami, Yasukazu: *See—*
Kojima, Hidetaka; Oda, Shingo; Yokoyama, Takushi; and Murakami, Yasukazu, 4,209,467, Cl. 260-340.700.
Murata Manufacturing Co., Ltd.: *See—*
Shiki, Haruo; Saito, Yoshiteru; Katsuki, Marefumi; and Wakino, Kikuo, 4,209,754, Cl. 330-307.000.
Murphy, Alan P.; and Habermehl, Fred M., III, to Procter & Gamble Company, The. Process for treating fabrics with fabric treatment compositions. 4,209,549, Cl. 427-11.000.
Murphy, Robert E.: *See—*
Gregg, Anton T.; and Murphy, Robert E., 4,209,205, Cl. 305-14.000.
Murray-Carver, Inc.: *See—*
Richardson, Arthur H., 4,208,766, Cl. 19-64.500.
Murray, Richard E.: *See—*
Wagner, Joseph F.; and Murray, Richard E., 4,209,204, Cl. 305-11.000.
Murro, Ronald P. Constant pressure lubricator for bearings. 4,209,081, Cl. 184-41.000.
Myers, Richard L.: *See—*
Fite, Wade L.; and Myers, Richard L., 4,209,693, Cl. 250-251.000.
N. V. Bekaert S.A.: *See—*
Vanvlaenderen, Roger, 4,209,153, Cl. 245-8.000.
N. V. Optische Industrie "De Oude Delft": *See—*
Duinker, Simon, 4,209,827, Cl. 364-414.000.
Nachtrieb, Karl: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.
Naefe, Paul, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Arrangement for the production of spherical particles from drops of aqueous nitrate solutions of uranium, plutonium or thorium, or mixtures of these materials for fuel and breeder elements for nuclear reactors. 4,209,492, Cl. 422-159.000.
Nagai, Hiroyuki: *See—*
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Nagai, Masayuki: *See—*
Yanagida, Hiroaki; Nagai, Masayuki; and Shimizu, Tadao, 4,209,477, Cl. 264-62.000.
Nagara, Hiroaki, to Sumitomo Electric Industries, Ltd. Load-responsive pressure reducing valve device for use in a vehicle brake system. 4,209,201, Cl. 303-22.00R.
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, to Nitto Boseki Co., Ltd.; and Iatron Laboratories, Inc. Novel L-leucyl-4-hydroxyanilide derivatives. 4,209,459, Cl. 260-507.00R.
Nagel/Kennedy & Associates: *See—*
Kennedy, Melvin, 4,209,004, Cl. 124-7.000.
Nakai, Masaaki: *See—*
Sahara, Masayoshi; and Nakai, Masaaki, 4,209,244, Cl. 354-51.000.
Nakamura, Yuzo: *See—*
Washida, Hiroshi; Sonoda, Tomiya; and Nakamura, Yuzo, 4,209,705, Cl. 250-486.000.
Nakane, Hisashi: *See—*
Takanashi, Hiroshi; Aoyama, Toshimi; and Nakane, Hisashi, 4,209,581, Cl. 430-283.000.
Nakayama, Shoji: *See—*
Sugai, Hiroshi; and Nakayama, Shoji, 4,209,293, Cl. 433-132.000.
Nalco Chemical Company: *See—*
Baer, William K.; Nielsen, Ralph R.; and Vartiak, Joseph F., 4,208,973, Cl. 111-1.000.
Nambu, Masami: *See—*
Yabune, Hideo; and Nambu, Masami, 4,209,340, Cl. 106-176.000.
Nanaumi, Ken: *See—*
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.
Nanba, Yasuhiro; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Photoelectric rangefinder. 4,209,241, Cl. 354-25.000.
Nara, Takashi: *See—*
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.
Narita, Hiroshi; Ibamoto, Masahiko; and Toyama, Jinichi, to Hitachi, Ltd. Motor control apparatus with an improved thyristor chopper circuit. 4,209,733, Cl. 318-345.00C.
National Distillers and Chemical Corporation: *See—*
Fischer, Joseph, 4,209,437, Cl. 260-31.80R.
National Research Development Corporation: *See—*
Wilson, Alan D.; and Crisp, Stephen, 4,209,434, Cl. 260-29.60H.
National Semiconductor Corporation: *See—*
Burns, Carmen D., 4,209,355, Cl. 156-630.000.
Nazarov, Boris V.: *See—*
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Nazarov, Boris V., 4,209,070, Cl. 173-78.000.
NCR Corporation: *See—*
Bell, David W.; and Sinram, Edward W., 4,209,261, Cl. 400-196.100.
Neder, Gunter: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, 4,209,208, Cl. 308-20.000.
Neely, Alvis: *See—*
Black, William R., Sr.; and Sams, Gerald L., 4,208,837, Cl. 49-56.000.
Nelson Industries, Inc.: *See—*
Olson, David A., 4,209,493, Cl. 422-176.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl PGF$_2$analogs. 4,209,645, Cl. 568-670.000.
Nemoto, Ichiro: *See—*
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,209,242, Cl. 354-25.000.
Neuman, Robert W.: *See—*
Wallace, John F.; and Neuman, Robert W., 4,209,324, Cl. 75-58.000.
New England Machinery, Inc.: *See—*
Ionescu, Alexandru D., 4,208,761, Cl. 15-304.000.
Newcomb, Alan L., to Smith International, Inc. Electronic bit gaging. 4,209,121, Cl. 228-49.00R.
Newcomb, Donald R., to Butternut Electronics Co. Vertical antenna with stub cancellation means. 4,209,790, Cl. 343-830.000.
Newcomb, Paul D.; Hopkins, Ethan C.; and Davignon, Paul A., to American Optical Corporation. Contact lens mold. 4,209,289, Cl. 425-410.000.
NGK Insulators, Ltd.: *See—*
Amaki, Takashi; and Mamiya, Mitsutoshi, 4,208,843, Cl. 51-207.000.
Yoshida, Takuji, 4,209,404, Cl. 210-225.000.
Nicholls, John T.: *See—*
Oven, Terence; Nicholls, John T.; and Higgs, Robert H., 4,209,199, Cl. 299-43.000.
Nicholson, John S.; and Tantum, James G., to Boots Company Limited, The. Preparation of therapeutic agents. 4,209,638, Cl. 562-401.000.
Nickson Industries, Inc.: *See—*
Florian, Roy S., 4,209,155, Cl. 248-62.000.
Nicol, Stuart K.; and Swanson, Andrew R., to Broken Hill Proprietary Company Limited, The. Treatment of coal slurries. 4,209,301, Cl. 44-24.000.
Nielsen, R. Frederick. Electrode assembly. 4,209,020, Cl. 128-640.000.
Nielsen, Ralph R.: *See—*
Baer, William K.; Nielsen, Ralph R.; and Vartiak, Joseph F., 4,208,973, Cl. 111-1.000.
Nikitopoulos, Robert: *See—*
Gunther, Philip B.; and Nikitopoulos, Robert, 4,209,479, Cl. 264-104.000.

Nippon Columbia Kabushikikaisha: *See*—
Hayashi, Hideaki, 4,209,669, Cl. 179-100.41M.
Kakuta, Susumu; Nukui, Katsuyoshi; and Hiraishi, Kenji, 4,209,119, Cl. 226-24.000.
Nippon Electric Co., Ltd.: *See*—
Shiki, Haruo; Saito, Yoshiteru; Katsuki, Marefumi; and Wakino, Kikuo, 4,209,754, Cl. 330-307.000.
Yutaka, Jin; Kasuga, Osamu; and Kyuzaki, Tsutomu, 4,209,756, Cl. 333-1.100.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nonaka, Terumoto, 4,209,795, Cl. 357-22.000.
Nippon Jidoseigyo Ltd.: *See*—
Uchiyama, Yasushi; and Awamura, Daikichi, 4,209,257, Cl. 356-394.000.
Nippon Oil Company, Limited: *See*—
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, ituji, 4,209,601, Cl. 526-114.000.
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, Mituji, 4,209,602, Cl. 526-114.000.
Nippon Zeon Co., Ltd.: *See*—
Yamamoto, Haruhisa; and Ooura, Kiyomori, 4,209,640, Cl. 562-532.000.
Nishimura, Toshio: *See*—
Takahara, Takeshi; Matsuura, Susumu; Nishimura, Toshio; and Inoue, Nobuo, 4,209,567, Cl. 428-403.000.
Nishizawa Shoji Co. Ltd.: *See*—
Kuroda, Minoru, 4,209,354, Cl. 156-219.000.
Nissan Motor Company, Limited: *See*—
Asano, Masaharu, 4,208,990, Cl. 123-32.0EE.
Nitta, Minoru: *See*—
Kajinaga, Yoshihiro; Nitta, Minoru; Sakurada, Ichio; and Ito, Shunji, 4,209,320, Cl. 75-0.5BA.
Nitta, Tsuneo; and Tanaka, Masatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for measuring characteristics of a loudspeaker. 4,209,672, Cl. 179-175.10A.
Nitto Boseki Co., Ltd.: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, 4,209,459, Cl. 260-507.00R.
Nixon, Chris: *See*—
Nixon, Raymond F.; and Nixon, Chris, 4,208,759, Cl. 15-250.230.
Nixon, Raymond F.; and Nixon, Chris. Windshield wiper attachment. 4,208,759, Cl. 15-250.230.
Noda, Shigeo; Honma, Hideo; and Kato, Sadamu, to Toyoda Koki Kabushiki Kaisha. Computerized numerical controller for a machine apparatus. 4,209,847, Cl. 364-900.000.
Noel, Stephane: *See*—
Tytgat, Daniel; Noel, Stephane; and Clerbois, Lucien, 4,209,600, Cl. 526-74.000.
Noguchi, Kosaku; Yoshimura, Kiyoharu; Tanaka, Honami; and Hayashi, Masao, to Koa Oil Co., Ltd. Oil adsorbent and process for preparation thereof. 4,209,382, Cl. 208-22.000.
Nogueira, Eduardo D.; Infanzon, Luis A. S.; and Tezanos, Enrique H. Process for electrolysis of brine by mercury cathodes. 4,209,370, Cl. 204-99.000.
Nolan, John T., Jr.: *See*—
Kessler, Richard V.; and Nolan, John T., Jr., 4,209,304, Cl. 48-202.000.
Noller, Hans G. Method of testing the effectiveness of a growth inhibiting agent on a microorganism. 4,209,586, Cl. 435-32.000.
Nomura, Katsuhiko; and Monde, Hirao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film winding mechanism. 4,209,246, Cl. 354-153.000.
Nomura, Takao; Taguchi, Yoshio; Kobayashi, Kazuo; and Sakata, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flexible foamed product with skin and process for its manufacture. 4,209,564, Cl. 428-315.000.
Nonaka, Terumoto, to Nippon Gakki Seizo Kabushiki Kaisha. Jsit-type field effect transistor with deep level channel doping. 4,209,795, Cl. 357-22.000.
Norberg, Jan A.: *See*—
Linden, Folke D.; and Norberg, Jan A., 4,209,136, Cl. 241-169.200.
Norcem A/S: *See*—
Smith-Johannsen, Robert, 4,209,339, Cl. 106-106.000.
Nordmark, Per-Olle; and Drugge, Robert, to Luossavaara-Kiirunavaara Aktiebolag. Screen. 4,209,097, Cl. 209-668.000.
Nordskog, Robert A. Dump valve assembly. 4,209,163, Cl. 251-96.000.
Noritake Iron Works Co., Ltd.: *See*—
Yoshida, Takuji, 4,209,404, Cl. 210-225.000.
Norlin Industries, Inc.: *See*—
Wangard, William; and Starkey, David T., 4,208,939, Cl. 84-1.170.
Wechter, Abraham J., 4,208,941, Cl. 84-298.000.
Nukui, Katsuyoshi: *See*—
Kakuta, Susumu; Nukui, Katsuyoshi; and Hiraishi, Kenji, 4,209,119, Cl. 226-24.000.
Numasaki, Yoso: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.
Nunan, Craig S., to Varian Associates, Inc. Fluoroscopic apparatus mounting fixture. 4,209,706, Cl. 250-490.000.
Nusslein, Ludwig; and Arndt, Friedrich, to Schering Aktiengesellschaft. 2-(Dimethylcarbamoylimino)-1,3,4-thiadiazoline-3-carboxylic acid ester derivatives. 4,209,627, Cl. 548-130.000.
NUSTEP Trenndusen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG: *See*—
Wenzel, Werner, 4,209,309, Cl. 55-269.000.
Nuver, Eric L. H.; and Gaertner, Robert F., to Esquire, Inc. Regulation circuit. 4,209,738, Cl. 323-22.0SC.
Nyeki nee Olga Kuprina, Gyorgyne: *See*—
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.
Oakes, W. Peter. Automatic continuous mixer apparatus. 4,209,258, Cl. 366-138.000.
O'Brien, Edward F.: *See*—
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,415, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,416, Cl. 252-76.000.
Occidental Research Corporation: *See*—
Stover, Carole S., 4,209,385, Cl. 208-254.00R.
Ochi, Takeshi: *See*—
Ohyama, Masumi; Sakuragi, Johji; Aono, Masanori; and Ochi, Takeshi, 4,209,783, Cl. 340-152.00T.
Oda, Shingo: *See*—
Kojima, Hidetaka; Oda, Shingo; Yokoyama, Takushi; and Murakami, Yasukazu, 4,209,467, Cl. 260-340.700.
Oediger, Hermann; and Schulze, Andreas, to Haarman & Reimer GmbH. Process for the preparation of piperonylidenecrotonic acid amides. 4,209,445, Cl. 260-340.50R.
Oediger, Hermann: *See*—
Schulze, Andreas; and Oediger, Hermann, 4,209,446, Cl. 260-340.50R.
Offermanns, Heribert: *See*—
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, 4,209,461, Cl. 260-545.00R.
Ogawa, Shinsaku: *See*—
Seko, Maomi; Ogawa, Shinsaku; and Takemura, Reiji, 4,209,369, Cl. 204-98.000.
Ogden, Gerald W.: *See*—
St. Clair, Donald R.; and Ogden, Gerald W., 4,209,185, Cl. 280-734.000.
Ogino, Shigeo; Yoshida, Noboru; and Kiyohara, Takao, to Sumitomo Chemical Company, Limited. Novel anti-tumor substance and preparation thereof. 4,209,507, Cl. 424-116.000.
Oguma, Tomio: *See*—
Minamoto, Naoki; Oguma, Tomio; and Sakakibara, Naoji, 4,208,746, Cl. 4-448.000.
Oguri, Katsuhiko: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,209,670, Cl. 179-100.41D.
Ohba, Shinya: *See*—
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.
Ohbayashi-Gumi, Ltd.: *See*—
Fujiwara, Toshio; Sakimoto, Junji; and Yoshioka, Hisaya, 4,209,268, Cl. 405-147.000.
Ohorodnik, Alexander; Auer, Eberhard; and Gehrmann, Klaus, to Hoechst Aktiengesellschaft. Production of pure acetyl chloride. 4,209,460, Cl. 260-544.00Y.
Ohta, Masafumi; and Sakai, Kiyoshi, to Ricoh Co., Ltd. Electrophotographic sensitive element with benzylamino carbazole charge transfer material. 4,209,327, Cl. 430-82.000.
Ohyama, Masumi; Sakuragi, Johji; Aono, Masanori; and Ochi, Takeshi, to Tokyo Shibaura Electric Co., Ltd. Object identification system. 4,209,783, Cl. 340-152.00T.
Oinuma, Kohji: *See*—
Akiyama, Hiroshi; Kuyama, Hiroshi; and Oinuma, Kohji, 4,209,592, Cl. 521-33.000.
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, to Yamanouchi Pharmaceutical Co., Ltd.; and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Aminoglycoside antibiotics and process for production thereof. 4,209,511, Cl. 424-180.000.
Okachi, Ryo: *See*—
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.
Okada, Hitoshi: *See*—
Umezawa, Hiroyuki; and Okada, Hitoshi, 4,209,812, Cl. 360-96.300.
Okada, Yasunori; and Fukuhara, Junzo, to Hitachi Chemical Company, Ltd. Electrical insulating coating composition. 4,209,438, Cl. 260-31.8XA.
Okajima, Tadashi. Can compressor. 4,208,961, Cl. 100-233.000.
Okamoto, Harunori: *See*—
Hashimoto, Kenjiro; Takagi, Shinichi; Okamoto, Harunori; and Miura, Minoru, 4,209,596, Cl. 525-333.000.
Okazaki, Hidemasa: *See*—
Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa, 4,209,077, Cl. 182-42.000.
Oki, Toshikazu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,209,588, Cl. 435-78.000.
Okita, Koichi, to Sumitomo Electric Industries, Ltd. Vascular prostheses composed of polytetrafluoroethylene and process for their production. 4,208,745, Cl. 3-1.400.
Okura, Takao: *See*—
Hosaka, Takefumi; Otaka, Shoichi; and Okura, Takao, 4,209,002, Cl. 123-32.0SP.

O'Lenick, Anthony J.: *See—*
Mayhew, Raymond L.; and O'Lenick, Anthony J., 4,209,449, Cl. 260-403.000.
Oliver, Robert C.: *See—*
Lloyd, Harold L.; Branscombe, Richard A.; and Oliver, Robert C., 4,209,585, Cl. 435-30.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, to SKF Industries, Inc. Rolling bearing for conveyor rolls. 4,209,208, Cl. 308-20.000.
Olson, David A., to Nelson Industries, Inc. Combination catalytic converter and muffler for an exhaust system. 4,209,493, Cl. 422-176.000.
Olson, Walter E.: *See—*
Duhl, David N.; and Olson, Walter E., 4,209,348, Cl. 148-3.000.
Omata, Yasukuni: *See—*
Ozaki, Yoshihiro; Kuniyoshi, Masayuki; Ishido, Takanobu; Kaneko, Shuichiro; and Omata, Yasukuni, 4,209,365, Cl. 204-14.00N.
Omnion, Incorporated: *See—*
Curtis, Alexander; Landsberg, Mark L.; and Meyers, Edwin J., 4,209,173, Cl. 273-240.000.
O'Neil, Edward G.: *See—*
Dutcher, Robert G.; and O'Neil, Edward G., 4,209,019, Cl. 128-419.00P.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Spiro[indoline-3,4'-piperidine]s. 4,209,625, Cl. 546-17.000.
Ong, Sienling; and Cuntze, Ulrich, to Hoechst Aktiengesellschaft. Polyglycol esters, process for their preparation and their use as surface-active agents. 4,209,333, Cl. 106-25.000.
Onishi, Ko: *See—*
Arita, Yoichi; Yada, Shinko; and Onishi, Ko, 4,209,376, Cl. 204-195.00C.
Ono, Nobuyasu. Vending machine for articles connected to an elongated member. 4,209,110, Cl. 221-73.000.
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, to Victor Company of Japan, Limited. Moving-coil type pickup cartridge. 4,209,670, Cl. 179-100.41D.
Onoguchi, Akira: *See—*
Shirai, Shogo; and Onoguchi, Akira, 4,209,702, Cl. 250-396.0ML.
Onsager, Olav T.; and Szecsi, Peter L., to Halcon International, Inc. Process for producing ethylene glycol. 4,209,650, Cl. 568-860.000.
Ooura, Kiyomori: *See—*
Yamamoto, Haruhisa; and Ooura, Kiyomori, 4,209,640, Cl. 562-532.000.
Optronics, Inc.: *See—*
Shackelford, John T., 4,209,825, Cl. 362-299.000.
Orelup, Richard B., to Morton-Norwich Products, Inc. Marker for petroleum fuels. 4,209,302, Cl. 44-59.000.
Orlandea, Nicolae; and Wiley, Jack C., to Deere & Company. Vehicle drive and suspension system. 4,209,072, Cl. 180-245.000.
Orth, Dieter: *See—*
Baumgarth, Manfred; Orth, Dieter; Radunz, Hans-Eckart; Lissner, Reinhard; and Maisenbacher, Jurgen, 4,209,444, Cl. 260-338.000.
Osaka Gas Co., Ltd.: *See—*
Arita, Yoichi; Yada, Shinko; and Onishi, Ko, 4,209,376, Cl. 204-195.00C.
Osder, Stephen S., to Sperry Corporation. Dynamic equalization system for dual channel automatic pilot. 4,209,734, Cl. 318-564.000.
Oshima, Takeo: *See—*
Mine, Kazumasa; and Oshima, Takeo, 4,209,518, Cl. 424-250.000.
Osono, Takashi: *See—*
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.
Otaka, Shoichi: *See—*
Hosaka, Takefumi; Otaka, Shoichi; and Okura, Takao, 4,209,002, Cl. 123-32.0SP.
Otsuka, Yasuhiro: *See—*
Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,378, Cl. 204-195.00S.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,377, Cl. 204-195.00S.
Ottesen, Otto, to ASEA Aktiebolag. Induction voltage transformer. 4,209,763, Cl. 336-70.000.
Oudet, Claude: *See—*
Regnier, Danielle; and Oudet, Claude, 4,208,868, Cl. 368-62.000.
Ould, Robert: *See—*
Avrich, Joseph; Ripley, Arthur C.; and Ould, Robert, 4,208,893, Cl. 70-178.000.
Oven, Terence; Nicholls, John T.; and Higgs, Robert H., to Coal Industry (Patents) Limited. Mineral mining machines. 4,209,199, Cl. 299-43.000.
Owens-Corning Fiberglas Corporation: *See—*
Lin, Kingso C.; and Hammond, Donald J., 4,209,425, Cl. 252-510.000.
Owens-Illinois, Inc.: *See—*
Breno, Philip J., 4,209,488, Cl. 422-101.000.
Scherf, Gerald F., 4,209,387, Cl. 209-530.000.
Uhlig, Albert R., 4,209,100, Cl. 215-216.000.
Oxenrider, Bryce C.: *See—*
Mares, Frank; Oxenrider, Bryce C.; Woolf, Cyril, deceased; and Woolf, Helga, executrix, 4,209,610, Cl. 260-40.00R.
Oya, Hiroo; and Kakinuma, Akio, to Fuji Jukogyo Kabushiki Kaisha. Catalytic converter for purifying exhaust gases of internal combustion engines. 4,209,494, Cl. 422-179.000.
Oya, Tadanori: *See—*
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.
Ozaki, Yoshihiro; Kuniyoshi, Masayuki; Ishido, Takanobu; Kaneko, Shuichiro; and Omata, Yasukuni, to Minolta Camera Kabushiki Kaisha. Process for manufacturing dielectric member. 4,209,365, Cl. 204-14.00N.
P. Ferrero & C. S.p.A: *See—*
Dogliotti, Amilcare, 4,209,536, Cl. 426-94.000.
P. R. Mallory & Co. Inc.: *See—*
Gunther, Philip B.; and Nikitopoulos, Robert, 4,209,479, Cl. 264-104.000.
Paap, Hans J.: *See—*
Arnold, Dan M.; Peelman, Harold E.; Langford, Obie M.; Paap, Hans J.; and Supernaw, Irwin R., 4,209,695, Cl. 250-270.000.
Page, John K. R.: *See—*
Kent, Peter J. C.; and Page, John K. R., 4,209,413, Cl. 252-70.000.
Paice, Derek A., to United States of America, Interior. Portable calibrator for d.c. circuit breakers. 4,209,739, Cl. 324-424.000.
Palmieri, Joseph M.: *See—*
Klein, Keith W.; and Palmieri, Joseph M., 4,209,761, Cl. 335-17.000.
Panzera, Carlino, to Brunswick Corporation. Porous ceramic seals and method of making same. 4,209,334, Cl. 106-54.000.
Paquin, Thomas T.: *See—*
Rollins, Richard L.; and Paquin, Thomas T., 4,209,815, Cl. 361-15.000.
Parent, Jean-Marc. Apparatus for removing tires from the rims of heavy vehicles such as trucks and busses. 4,209,054, Cl. 157-1.280.
Park, Dong-Sil: *See—*
Chatterji, Debajyoti; and Park, Dong-Sil, 4,209,573, Cl. 429-104.000.
Parker, Donald L.: *See—*
Brademeyer, David L.; and Parker, Donald L., 4,208,881, Cl. 60-578.000.
Parker Manufacturing Company: *See—*
Ewig, John F., Jr., 4,208,792, Cl. 30-228.000.
Partlow, Booker T. Portable wall-mounted physical conditioning equipment kit. 4,209,168, Cl. 272-78.000.
Pasik, John J., to Larry McGee Company. Starting circuit for gaseous discharge lamps. 4,209,730, Cl. 315-290.000.
Passavant-Werke Michelbacher Huette: *See—*
Berlenbach, Norbert; and Klegraf, Ferdinand, 4,209,395, Cl. 210-46.000.
Pate, Harold T.; and Wozniak, Glenn A., to Indian Head Inc. Conductor clamping device. 4,209,661, Cl. 174-65.00R.
Patelhold Patentverwertungs- & Elektro-Holding AG: *See—*
Snedkerud, Ole; and Wyss, Jurg, 4,209.758, Cl. 333-17.00M.
Patzschke, Hans-Peter, to Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts. Modified, water-dilutable polymer oil imides containing carboxyl groups. 4,209,598, Cl. 525-333.000.
Paulson, Gary F.: *See—*
Bowen, Jack L.; and Paulson, Gary F., 4,209,266, Cl. 403-329.000.
Paust, Joachim: *See—*
Jaedicke, Hagen; and Paust, Joachim, 4,209,450, Cl. 260-410.000.
Peachee, C. Theodore, Jr., to Emerson Electric Co. Die cast rotor with cast-in-place oil return member. 4,209,722, Cl. 310-90.000.
Peck, Christopher M.; and Gozna, Eric R., to Camelia Manufacturing Co. Ltd. Disposable splint. 4,209,011, Cl. 128-87.00R.
Peck, David E., to Rockwell International Corporation. Brake shoe. 4,209,084, Cl. 188-250.00D.
Pedretti, Gaetano, to Cerim S.p.A. Device for footwear upper assembling on respective lasts or shoe trees. 4,208,751, Cl. 12-10.000.
Pedrini, Giovanni: *See—*
Koppl, Georg; Pedrini, Giovanni; and Widmer, Hans, 4,209,679, Cl. 200-148.00A.
Peelman, Harold E.: *See—*
Arnold, Dan M.; Peelman, Harold E.; Langford, Obie M.; Paap, Hans J.; and Supernaw, Irwin R., 4,209,695, Cl. 250-270.000.
Pennington, James E., to Team, Inc. Method of and apparatus for sealing a leak in a pipeline. 4,209,029, Cl. 137-15.000.
Pepe, Enrico J., to Union Carbide Corporation. Aminoorganosilicon acylamino compounds. 4,209,455, Cl. 556-419.000.
Peressini, Eugene R.: *See—*
Linford, Gary J.; Peressini, Eugene R.; and Sooy, Walter R., 4,209,689, Cl. 455-609.000.
Periou, Pierre, to Compagnie Industrielle de Mecanismes. Permanent magnet stator frame structure for an electric motor. 4,209,724, Cl. 310-154.000.
Perkins, John A. Reflector device for bicycles. 4,209,230, Cl. 350-99.000.
Perkins, Norman P., Jr.: *See—*
Dimarco, Bernard; Kralik, Andrew J.; and Perkins, Norman P., Jr., 4,209,760, Cl. 335-17.000.
Perlin, Alfred R.: *See—*
Ward, Bruce D.; and Perlin, Alfred R., 4,209,010, Cl. 128-1.00R.
PerSci, Inc.: *See—*
Bryer, Philip S., 4,209,813, Cl. 360-105.000.
Persson, Nils G. W. Loading pallet. 4,208,971, Cl. 108-51.100.
Pertinen, Raymond W.: *See—*
Loispeich, Joseph A.; and Pertinen, Raymond W., 4,209,111, Cl. 221-75.000.

Peter, Cornelius, to Robert Bosch GmbH. Method and apparatus for monitoring the operation of an oxygen sensor. 4,208,993, Cl. 123-119.0EC.

Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Seal means for high pressure control valves. 4,209,040, Cl. 137-625.480.

Peterson, Robert R., to Barry Wright Corporation. Constant velocity, torsionally rigid, flexible coupling. 4,208,889, Cl. 64-10.000.

Petiau, Raymond H., to Agence Nationale de valorisation de la Recherche (ANVAR). Anti-splash device. 4,209,162, Cl. 249-206.000.

Petrocci, Alfonso N.: *See*—
Green, Harold A.; Merianos, John J.; Petrocci, Alfonso N.; and Weinstein, Morris, 4,209,397, Cl. 210-54.000.

Petrolite Corporation: *See*—
Martin, Robert B., 4,209,374, Cl. 204-188.000.

Petry, Stanton H., to Cory Food Services, Inc. Beverage brewer housing structure. 4,208,958, Cl. 99-300.000.

Peyraud, Jean M.: *See*—
Delcroix, Jean L.; and Peyraud, Jean M., 4,209,703, Cl. 250-423.00R.

Pfaffle, Ernst, to Hans Sickinger Co. Method and construction for binding calendars and the like. 4,208,750, Cl. 11-1.00A.

Pfister, Hans B.: *See*—
Baltensperger, Rudolf; and Pfister, Hans B., 4,208,969, Cl. 104-111.000.

Pfizer Inc.: *See*—
Johnson, Michael R., 4,209,520, Cl. 424-263.000.
Sarges, Reinhard, 4,209,527, Cl. 424-273.00B.
Sarges, Reinhard, 4,209,630, Cl. 548-309.000.

Pharmacare, Inc.: *See*—
Carkhuff, Edwin D., 4,209,096, Cl. 206-621.000.

Philco-Ford Corporation: *See*—
MacKenzie, Ronald, 4,209,178, Cl. 277-133.000.

Phillips Petroleum Company: *See*—
Baldwin, Bernard A., 4,209,410, Cl. 252-48.200.
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,209,453, Cl. 260-446.000.
Doll, Calvin K.; and Tyrrell, Phillip A., 4,208,955, Cl. 93-44.000.
Forster, John W.; and Roper, Louis E., 4,209,409, Cl. 252-8.50A.

Phipps, Robert H., to American Cyanamid Company. Wire guide plate for production of gaseous metal halides. 4,209,707, Cl. 250-544.000.

Photis, James M., to Stauffer Chemical Company. Method for preparing acyl cyanides. 4,209,462, Cl. 260-545.00R.

Picker Corporation: *See*—
Thomenius, Kai E.; and Bernardi, Richard B., 4,208,916, Cl. 73-626.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Seat adjuster. 4,209,158, Cl. 248-421.000.

Pieper, Wilhelm, to Gebr. Hilgeland. Press for producing machine elements, especially balls, rivets and the like. 4,208,899, Cl. 72-344.000.

Pierce, Everette M.; and Allen, Henry C., to United States of America, Army. Ambient cured smokeless liner/inhibitor for propellants. 4,209,351, Cl. 149-19.100.

Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet Fillain, Paul, to Labaz. Stabilization of vinyl resins. 4,209,439, Cl. 260-45.80N.

Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Cointet de Fillain, Paul, to Labaz. Associations for stabilizing vinyl resins. 4,209,440, Cl. 260-45.80N.

Pinter, Kenneth W.: *See*—
Davis, Abraham D.; and Pinter, Kenneth W., 4,209,565, Cl. 428-347.000.

Pioch, Michel M. R., to Pont-A-Mousson S.A. Process for the aseptic packing of products and machine employing said process. 4,208,852, Cl. 53-167.000.

Pircon, Ladislav J. Heterogeneous process. 4,209,502, Cl. 423-659.000.

Pissiotas, Georg; Duerr, Dieter; and Rohr, Otto, to Ciba-Geigy Corporation. Herbicidally active phenylformamidine compounds. 4,209,319, Cl. 71-121.000.

Pittman, Michael J.: *See*—
Henning, Michael L.; and Pittman, Michael J., 4,209,856, Cl. 367-87.000.

Plank, Charles J.: *See*—
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,209,499, Cl. 423-328.000.

Plantier, George W. Antenna mounting bracket. 4,209,788, Cl. 343-713.000.

Platt, Stephen A., to S. A. Platt, Inc. Wire coiling apparatus. 4,208,896, Cl. 72-142.000.

Plaza, Erwin: *See*—
Stephan, Gunter; Birmes, Hartmut; Haus, Artur; and Plaza, Erwin, 4,209,297, Cl. 8-467.000.

Plessey Handel und Investments AG: *See*—
Henning, Michael L.; and Pittman, Michael J., 4,209,856, Cl. 367-87.000.

Pneumafil Corporation: *See*—
Starling, Bobby L., 4,208,762, Cl. 15-312.00R.

Podenski, Patrick A.: *See*—
Morris, John P.; and Podenski, Patrick A., 4,209,149, Cl. 244-53.00B.

Poe, L. Richard, to Hartwell Corporation. Keeper for rotary latches. 4,209,194, Cl. 292-341.180.

Poggemiller, Erhard; and Sweet, Ralph W., to Kep Enterprises; and Sweet Manufacturing Ltd. Draft control and tail beam device for ground working discer type agricultural implements and the like. 4,209,067, Cl. 172-190.000.

Polaroid Corporation: *See*—
Bloom, Stanley M.; and Levy, Boris, 4,209,330, Cl. 430-212.000.
Czumak, Frank M., 4,209,235, Cl. 352-78.00R.
Hudspeth, William, 4,209,692, Cl. 250-239.000.
Johnson, Bruce K.; and Whiteside, George D., 4,209,243, Cl. 354-30.000.

Polo, Benito. Electronic ignition system. 4,208,992, Cl. 123-117.00R.

Polonsky, Samuel, to Timex Corporation. Timing device. 4,208,867, Cl. 368-262.000.

Polymet Corporation: *See*—
Hunt, James G., 4,209,122, Cl. 228-173.00E.

Polytop Corporation: *See*—
Wilson, Woodrow S.; and Gryncewicz, Benjamin, 4,209,114, Cl. 222-536.000.

Ponder, James E., to Texas Instruments Incorporated. Semiconductor memory cell with clocked voltage supply from data lines. 4,209,851, Cl. 365-190.000.

Pont-A-Mousson S.A.: *See*—
Denis, Gerard M.; Ginglinger, Bernard M.; and Rothamel, Claude M., 4,209,484, Cl. 264-184.000.
Pioch, Michel M. R., 4,208,852, Cl. 53-167.000.

Pope, George N.: *See*—
Mitsche, Roy T.; and Pope, George N., 4,209,655, Cl. 585-664.000.

Popham, Edward V. Air defrost housing. 4,208,884, Cl. 62-282.000.

Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A. Linear induction motor. 4,209,718, Cl. 310-13.000.

Popplewell, James M.: *See*—
Anthony, William H.; and Popplewell, James M., 4,209,059, Cl. 165-1.000.

Portescap: *See*—
Regnier, Danielle; and Oudet, Claude, 4,208,868, Cl. 368-62.000.

Posnansky, Mario, to Raimann, Bernardo, a part interest. Installation for utilizing solar energy with wavelength selective reflector. 4,209,222, Cl. 350-1.600.

Post Office, The: *See*—
Everard, John D., 4,209,773, Cl. 340-347.0DA.

Powell, Thomas E.; and Donaldsoa, Edward, to White Motor Corporation of Canada Limited. Axial flow combine with improved inlet transition area. 4,209,024, Cl. 130-27.00T.

Power Custom, Inc.: *See*—
Power, Ronald W., 4,208,821, Cl. 42-1.00S.

Power, Ronald W., to Power Custom, Inc. Variable range sight. 4,208,821, Cl. 42-1.00S.

Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, to Akademia Rolniczo-Techniczna. Method of production of thermostable textured milk protein product resembling beef. 4,209,534, Cl. 426-42.000.

PPG Industries, Inc.: *See*—
Raetzsch, Carl W.; and Cunningham, Hugh, 4,209,380, Cl. 204-282.000.
Seymour, Samuel L., 4,209,314, Cl. 65-104.000.

Prescott, Gerald F.; and Lewis, Charles T., Jr., to Texaco Inc. Sulfuric acid catalyzed alkylation process. 4,209,656, Cl. 585-715.000.

Pretzer, Wayne R.: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,209,465, Cl. 568-385.000.

Previte, Robert W., to W. R. Grace & Co. Method of enhancing the compressive strength of hydraulic cement composition. 4,209,336, Cl. 106-90.000.

Priarone, Paul: *See*—
Soodak, Charles; and Priarone, Paul, 4,209,176, Cl. 277-95.000.

Prichard, William W., to Du Pont de Nemours, E. I., and Company. Hydrogenation of butadienepolyperoxide to unsaturated diols. 4,209,651, Cl. 568-861.000.

Priegnitz, Robert A., to Coilcraft, Inc. Regulated switching mode power supply. 4,209,826, Cl. 363-21.000.

Priepke, Edward H.: *See*—
McAllister, Ronald L.; Priepke, Edward H.; and Wagstaff, Robert A., 4,209,137, Cl. 241-221.000.

Prochazka, Svante, to General Electric Company. Process for preparing semiconducting silicon carbide sintered body. 4,209,474, Cl. 264-29.500.

Procter & Gamble Company, The: *See*—
Dirksing, Robert S., 4,208,747, Cl. 4-228.000.
Murphy, Alan P.; and Habermehl, Fred M., III, 4,209,549, Cl. 427-11.000.
Shulman, Joel I., 4,209,468, Cl. 568-13.000.
Sisson, James B., 4,209,563, Cl. 428-288.000.
Whyte, David D., 4,209,417, Cl. 252-174.110.

Produits Chimiques Ugine Kuhlmann: *See*—
Cabane, Bruno; and Vergnault, Joel, 4,209,390, Cl. 210-12.000.

Profitt, James A.: *See*—
Ong, Helen H.; and Profitt, James A., 4,209,625, Cl. 546-17.000.

Proietto, Nazario, to AMP Incorporated. Method and apparatus for terminating multi-conductor cable. 4,209,219, Cl. 339-99.00R.

Prusic, Milinko, to Sandvik Aktiebolag. Plunger for compressors. 4,208,953, Cl. 92-193.000.

Pu, Lyong S.; and Kamoda, Hitoshi, to Fuji Xerox Co., Ltd. Electrophotographic photosensitive material with a quinocyanine pigment. 4,209,579, Cl. 430-78.000.

Puri, Ajay K.; Caruso, Michael J.; Dennison, Stanley M.; and Brown, Jay, to Texas Instruments Incorporated. MOS Digital-to-analog converter employing scaled field effect devices. 4,209,781, Cl. 340-347.0DA.

Pusch, Gunter. Infra-red detection system for detecting low-flying objects. 4,209,699, Cl. 250-340.000.

Quaglia, Giuseppe: *See*—
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,209,606, Cl. 528-167.000.
Quarton, William T., to Honeywell Inc. Battery back-up regulator. 4,209,710, Cl. 307-66.000.
Queener, Carl A.: *See*—
Clark, Gary A.; and Queener, Carl A., 4,209,249, Cl. 355-14.00R.
Quinn, John A.: *See*—
Kim, Bang M.; Quinn, John A.; and Graves, David J., 4,208,902, Cl. 73-19.000.
R. A. Pearson Company: *See*—
Bly, Ray E., 4,209,094, Cl. 206-427.000.
R.K.S.: *See*—
Martinez, Joachim, 4,209,214, Cl. 339-5.00M.
R. W. Hartnett Company: *See*—
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,208,962, Cl. 101-35.000.
Raber, Peter E.: *See*—
Heynau, Hans A.; and Raber, Peter E., 4,209,255, Cl. 356-152.000.
Rabow, Gerald, to International Telephone and Telegraph Corporation. State variant correlator. 4,209,834, Cl. 364-604.000.
Radunz, Hans-Eckart: *See*—
Baumgarth, Manfred; Orth, Dieter; Radunz, Hans-Eckart; Lissner, Reinhard; and Maisenbacher, Jurgen, 4,209,444, Cl. 260-338.000.
Raetzsch, Carl W.; and Cunningham, Hugh, to PPG Industries, Inc. Cathode element for electrolytic cell. 4,209,380, Cl. 204-282.000.
Ragle, Herbert U.; and Blessum, Norman S., to Burroughs Corporation. Di-gap, variable-frequency recording technique and associated system. 4,209,810, Cl. 360-77.000.
Raimann, Bernardo: *See*—
Posnansky, Mario, 4,209,222, Cl. 350-1.600.
Rainey, Don E. Ocean tide energy converter. 4,208,878, Cl. 60-496.000.
Rains, Robert L.; and Rathbun, Larry R. Magnetic mixer. 4,209,259, Cl. 366-273.000.
Rakoff, Philip: *See*—
Holgado, Rosauro V.; and Rakoff, Philip, 4,209,414, Cl. 252-75.000.
Ramer, James L. Solar still apparatus. 4,209,363, Cl. 202-180.000.
Rao, G. R. Mohan; Stanczak, John S.; Lien, Jih-Chang; and Bhatia, Shyam, to Texas Instruments Incorporated. Semiconductor integrated circuit with implanted resistor element in polycrystalline silicon layer. 4,208,781, Cl. 29-577.00C.
Rasp, Christian: *See*—
Berthold, Werner; Botta, Artur; von Konig, Anita; and Rasp, Christian, 4,209,583, Cl. 430-418.000.
Rast, Gustaf J.: *See*—
Barley, Thomas A.; and Rast, Gustaf J., 4,209,786, Cl. 343-17.700.
Rathbun, Larry R.: *See*—
Rains, Robert L.; and Rathbun, Larry R., 4,209,259, Cl. 366-273.000.
Rattner, Manfred: *See*—
Goetzl, Horst; and Rattner, Manfred, 4,209,406, Cl. 250-402.000.
Raulf, Erich: *See*—
Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, 4,209,323, Cl. 75-48.000.
Ravagnati, Aldo: *See*—
Bambara, Mario; and Ravagnati, Aldo, 4,209,841, Cl. 364-200.000.
Raychem Corporation: *See*—
Diaz, Stephen H.; and Horsma, David A., 4,209,352, Cl. 156-49.000.
Siden, Dennis C., 4,208,788, Cl. 29-862.000.
Raymond, Joseph H., Jr., to Texas Instruments Incorporated. Semiconductor integrated circuit with implanted resistor element in second-level polycrystalline silicon layer. 4,209,716, Cl. 357-59.000.
RCA Corporation: *See*—
Dischert, Robert A.; and Cosgrove, William J., 4,209,801, Cl. 358-37.000.
Harwood, Leopold A., 4,209,808, Cl. 358-243.000.
Klein, Norman S., 4,209,347, Cl. 136-89.0PC.
Miko, Sandor; and Mullis, Phillip R., 4,209,731, Cl. 315-400.000.
Richman, Paul, 4,208,780, Cl. 29-571.000.
Smith, Lawrence E., 4,209,732, Cl. 315-400.000.
Reddy, Junuthula N., to Bendix Corporation, The. Anti-flood circuit for use with an electronic fuel injection system. 4,208,991, Cl. 123-32.0EG.
Reedy, Charles E., to ACF Industries, Incorporated. Adapter for bottom operable tank car valve. 4,209,036, Cl. 137-382.500.
Rees, Herbert; and Schad, Robert D., to Husky Injection Molding Systems Limited. Bottle-molding system. 4,209,290, Cl. 425-547.000.
Regensburger, Joseph, to Alpine Industries, Inc. Traction devices. 4,209,049, Cl. 152-216.000.
Regie Nationale des Usines Renault: *See*—
Leichle, Claude P., 4,209,829, Cl. 364-442.000.
Regnier, Danielle; and Oudet, Claude, to Portescap. Control device for a step-by-step motor. 4,208,868, Cl. 368-62.000.
Rehnmark, Stig L.: *See*—
Gerst, Carl W.; Hair, Hugh A.; and Rehnmark, Stig L., 4,209,791, Cl. 343-854.000.
Reichel, Richard C.: *See*—
Lazar, Remus I.; and Reichel, Richard C., 4,209,298, Cl. 8-582.000.
Reidenbach, Stanley G., to General Electric Company. Condition responsive battery charging circuit. 4,209,736, Cl. 320-22.000.
Reissland, Martin-Ulrich, to VDO Adolf Schindling AG. Vented plug for storage batteries. 4,209,572, Cl. 429-53.000.
Relle nee Somfai, Zsuzsa: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.
Render, Michael L.: *See*—
Miller, Robert G.; and Render, Michael L., 4,208,925, Cl. 74-866.000.
Renishaw Electrical Limited: *See*—
McMurtry, David R.; and Ackery, Lionel J., 4,209,206, Cl. 308-9.000.
Renner, Gerhard; and Unsold, Eberhard, to Gesellschaft fur Strahlen- und Umweltforschung mbH Munchen. Method for producing selected mass spectra. 4,209,697, Cl. 250-282.000.
Rentzepis, Peter M., to Bell Telephone Laboratories, Incorporated. Induced absorption elements. 4,209,690, Cl. 455-611.000.
Repa Feinstanzwerk GmbH: *See*—
Biller, Dieter, 4,208,771, Cl. 24-230.0AL.
Resco, Inc.: *See*—
Schindler, Earle R., 4,208,904, Cl. 73-136.00A.
Research-Cottrell: *See*—
Feldman, Paul L.; and Sampathkumar, Krishnaswamy, 4,209,306, Cl. 55-2.000.
Reymond, Jean-Claude; and Hidalgo, Jean-Luc, to Thomson-CSF. System for monitoring the movements of one or more point sources of luminous radiation. 4,209,254, Cl. 356-152.000.
Rhone-Poulenc Industries: *See*—
Gac, Robert; Dal Pont, Jean-Pierre; and Levet, Frederic, 4,209,646, Cl. 568-724.000.
Rib Loc (Hong Kong) Ltd.: *See*—
Menzel, Julian M., 4,209,043, Cl. 138-154.000.
Rich, Edward L., III, to Midori Anzen Company, Ltd. Control and monitoring system for oxygen generating device. 4,209,491, Cl. 422-110.000.
Richards, William: *See*—
Grolman, Bernard; and Richards, William, 4,208,800, Cl. 33-200.000.
Richardson, Arthur H., to Murray-Carver, Inc. Electric clutch feeder drive for seed cotton processing machinery. 4,208,766, Cl. 19-64.500.
Richardson Company, The: *See*—
Jasinski, Dennis N.; Shifman, Jerry; and Mather, Selwyn, 4,209,285, Cl. 417-571.000.
Richelmi, Joseph H.: *See*—
Leroy, Vincent M.; and Richelmi, Joseph H., 4,209,366, Cl. 204-27.000.
Richman, Paul, to RCA Corporation. Last-stage programming of semiconductor integrated circuits including selective removal of passivation layer. 4,208,780, Cl. 29-571.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.
Ricks, Jay W. Method and apparatus for recovery of combustible gas from waste. 4,209,303, Cl. 48-111.000.
Ricoh Co., Ltd.: *See*—
Ohta, Masafumi; and Sakai, Kiyoshi, 4,209,327, Cl. 430-82.000.
Riker Laboratories, Inc.: *See*—
Hammar, Walton J., 4,209,633, Cl. 560-48.000.
Riley, John, to Kepco, Inc. Amplifier programmable in gain and output polarity. 4,209,753, Cl. 330-51.000.
Riple, James C., Jr., to Garrett Corporation, The. Fuel control system. 4,208,871, Cl. 60-39.28R.
Ripley, Arthur C.: *See*—
Avrich, Joseph; Ripley, Arthur C.; and Ould, Robert, 4,208,893, Cl. 70-178.000.
Riseman, Jacob: *See*—
Ho, Irving T.; and Riseman, Jacob, 4,209,349, Cl. 148-187.000.
Ho, Irving T.; and Riseman, Jacob, 4,209,350, Cl. 148-188.000.
Rittler, Hermann L., to Corning Glass Works. Glass-ceramic coated optical waveguides. 4,209,229, Cl. 350-96.340.
Riveron, Andre M.; Astoin, Jacques N.; Marivain, Alain D.; Crucifix born Depheimer, Micheline; Lapotre, Martine M.; and Torrens born Le Gargean, Yvette M., to Unicler. α-Ethylenic alcohols and ketones, their preparation, and their use as medicaments. 4,209,517, Cl. 424-248.570.
RJM Manufacturing, Inc.: *See*—
Cecchi, Aristide, 4,209,138, Cl. 242-56.900.
Robert Bosch GmbH: *See*—
Hofmann, Eberhard; Schwartz, Reinhard; and Wagner, Berthold, 4,208,998, Cl. 123-139.0AZ.
Konrath, Karl, 4,208,999, Cl. 123-140.00R.
Peter, Cornelius, 4,208,993, Cl. 123-119.0EC.
Schadlich, Fritz, 4,209,719, Cl. 310-42.000.
Roberts, Kipton J., to Grove, Dennis, a part interest. Wrist-to-racket angulation aid for tennis players. 4,209,169, Cl. 273-29.00A.
Roberts, Liona R., Jr., to Interstate Electronics Corp. Mud gas ratio and mud flow velocity sensor. 4,208,906, Cl. 73-155.000.
Robertshaw Controls Company: *See*—
Goff, Clifford E., 4,209,030, Cl. 137-84.000.
Tyler, Hugh J., 4,208,785, Cl. 29-611.000.
Robinson, Martin A.: *See*—
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,209,654, Cl. 585-465.000.
Robinson, Victor E.: *See*—
Freeman, George M.; and Robinson, Victor E., 4,209,379, Cl. 204-198.000.
Roblin Industries, Inc.: *See*—
Sauer, Gale E., 4,208,851, Cl. 52-573.000.

Roccatagliata, Raul J.: *See*—
Jacobs, Martin; and Roccatagliata, Raul J., 4,208,988, Cl. 122-510.000.
Rockwell International Corporation: *See*—
Peck, David E., 4,209,084, Cl. 188-250.00D.
Wooten, John R.; Carpenter, Harry W.; and Cain, Edwin F. C., 4,209,478, Cl. 264-65.000.
Rocon Industries, Inc.: *See*—
Manning, George, 4,208,829, Cl. 43-131.000.
Rogachev, Viktor I.: *See*—
Gerasimov, Viktor G.; Kljuev, Vladimir V.; Kuznetsov, Viktor B.; Kurozaev, Viktor P.; Rogachev, Viktor I.; Sukhorukov, Vasily V.; Ulitin, Jury M.; and Fedosenko, Jury K., 4,209,744, Cl. 324-241.000.
Rohm and Haas Company: *See*—
Akiyama, Hiroshi; Kuyama, Hiroshi; and Oinuma, Kohji, 4,209,592, Cl. 521-33.000.
Johnson, Wayne O., 4,209,318, Cl. 71-88.000.
Rohner, Michel A.; and Florence, Judit K., to Singer Company, The. Clipping polygon faces through a polyhedron of vision. 4,208,810, Cl. 35-10.240.
Rohr, Otto: *See*—
Pissiotas, Georg; Duerr, Dieter; and Rohr, Otto, 4,209,319, Cl. 71-121.000.
Roland Corporation: *See*—
Tsurubuchi, Tooru, 4,208,940, Cl. 84-1.240.
Roll, Dwight M.; Kofstad, Myron L.; and Habstritt, Charles H., to Roller, Inc. Herbicide applicator. 4,208,835, Cl. 47-1.500.
Roller, Inc.: *See*—
Roll, Dwight M.; Kofstad, Myron L.; and Habstritt, Charles H., 4,208,835, Cl. 47-1.500.
Rollins, Richard L.; and Paquin, Thomas T., to Jard, Inc. Capacitor protective circuit. 4,209,815, Cl. 361-15.000.
Rolls-Royce Limited: *See*—
McMurtry, David R.; and Ackery, Lionel J., 4,209,206, Cl. 308-9.000.
Roman, Steven A., to Shell Oil Company. Cyclopropylmethanol pesticide. 4,209,642, Cl. 568-591.000.
Rood, Robert M. Low bounce momentary contact switch. 4,209,682, Cl. 200-159.00R.
Roper, Louis E.: *See*—
Forster, John W.; and Roper, Louis E., 4,209,409, Cl. 252-8.50A.
Rosas, Alan. Cup top reflector. 4,209,106, Cl. 220-212.000.
Rosen, Arnold M., to Rosen, Arnold M. Vehicle parking apparatus. 4,209,276, Cl. 414-240.000.
Rosenbaum, Georges: *See*—
Bouillon, Claude; and Rosenbaum, Georges, 4,209,506, Cl. 424-68.000.
Rosinski, Edward J.: *See*—
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,209,499, Cl. 423-328.000.
Ross, Charles W., to Leeds & Northrup Company. Method and apparatus for controlling an interconnected distribution system which includes a jointly owned generating unit. 4,209,831, Cl. 364-492.000.
Ross, Wallace D. Process of inlaying a design in molded simulated marble. 4,209,486, Cl. 264-245.000.
Rossi, Eugene F., to Allis-Chalmers Corporation. Fluid storage and distribution arrangement mounted on rotary reactor. 4,209,292, Cl. 432-105.000.
Roth, Ernst: *See*—
Kleine, Ewald; and Roth, Ernst, 4,208,838, Cl. 49-192.000.
Roth, Michael, to Wacker-Chemie GmbH. Process for rendering building materials hydrophobic. 4,209,432, Cl. 260-29.20M.
Rothamel, Claude M.: *See*—
Denis, Gerard M.; Ginglinger, Bernard M.; and Rothamel, Claude M., 4,209,484, Cl. 264-184.000.
Rothschild, Herbert F. Process of water recovery and removal. 4,209,364, Cl. 203-11.000.
Rotomors S.p.A.: *See*—
Bertorello, Mario, 4,209,180, Cl. 279-4.000.
Rotthaus, Dirk: *See*—
Somborn, Gunter; Kluge, Johannes; Rotthaus, Dirk; Hasselmann, Heinz; and Lichtenvort, Uwe, 4,209,681, Cl. 200-157.000.
Rowland-Hill, Edward W., to Sperry Rand Corporation. Isolated pneumatic cleaning system. 4,208,858, Cl. 56-14.600.
Royer, Daniel: *See*—
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,209,725, Cl. 310-313.000.
Rubber Millers, Inc.: *See*—
Day, John T., 4,209,089, Cl. 198-847.000.
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., to Mobil Oil Corporation. Crystalline zeolite ZSM-43 synthesis thereof. 4,209,499, Cl. 423-328.000.
Ruegg, Franz; and Schwarz, Otto, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for intermittently advancing a sheet of indeterminate length. 4,209,120, Cl. 226-32.000.
Ruehle, William H., to Mobil Oil Corporation. Method and system for enhancing primary seismic reflection signals in common depth point sets. 4,209,854, Cl. 367-43.000.
Ruetschi, Paul, to Leclanche S.A. Long-life alkaline primary cell having low water content. 4,209,574, Cl. 429-133.000.
Rundel, Morton S.; Keller, Frank R.; and Moritz, Peter M., to Gould Inc. Modular electrical control station. 4,209,820, Cl. 361-331.000.
Rush, Donald L.: *See*—
Anderson, Larry W.; Rush, Donald L.; and McDonald, Michael P., 4,209,828, Cl. 364-426.000.
Rush-Presbyterian-St. Luke's Medical Center: *See*—
Bacus, James W., 4,209,548, Cl. 427-2.000.
Ryan, James P.: *See*—
Charles, Joseph T.; and Ryan, James P., 4,209,671, Cl. 179-175.000.
Ryer, Jack: *See*—
Winans, Esther D.; Ryer, Jack; Gutierrez, Antonio; and Shaub, Harold, 4,209,411, Cl. 252-56.00D.
Zimmerman, Abraham A.; and Ryer, Jack, 4,209,422, Cl. 252-344.000.
S. A. Platt, Inc.: *See*—
Platt, Stephen A., 4,208,896, Cl. 72-142.000.
Sadakane, Katsuyuki: *See*—
Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa, 4,209,077, Cl. 182-42.000.
Safonov, Anatoly V.: *See*—
Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See*—
Heurtel, Jean-Louis, 4,209,576, Cl. 429-161.000.
Sahara, Masayoshi; and Nakai, Masaaki, to Minolta Camera Kabushiki Kaisha. Light responsive camera actuation control. 4,209,244, Cl. 354-51.000.
Sahlin, Folke: *See*—
Davegardh, Tore; Gellerstedt, Nils; and Sahlin, Folke, 4,208,945, Cl. 86-20.00R.
Sai Engineers, Inc.: *See*—
Membreno, Robert J., 4,209,728, Cl. 315-159.000.
Sainsbury, Thomas E. Softball pitching machine. 4,209,003, Cl. 124-7.000.
St. Clair, Donald R.; and Ogden, Gerald W., to General Time Corporation. Sensing apparatus with electrical actuation system. 4,209,185, Cl. 280-734.000.
Saito, Yoshiteru: *See*—
Shiki, Haruo; Saito, Yoshiteru; Katsuki, Marefumi; and Wakino, Kikuo, 4,209,754, Cl. 330-307.000.
Sakai, Kiyoshi: *See*—
Ohta, Masafumi; and Sakai, Kiyoshi, 4,209,327, Cl. 430-82.000.
Sakakibara, Naoji: *See*—
Minamoto, Naoki; Oguma, Tomio; and Sakakibara, Naoji, 4,208,746, Cl. 4-448.000.
Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Channel selection apparatus. 4,209,751, Cl. 455-186.000.
Sakane, Kuniyoshi: *See*—
Katayama, Ichiro; Kubota, Hirosuke; Mochizuki, Mitsuo; Sakane, Kuniyoshi; Mihara, Toshimichi; and Kitawaki, Tokuzo, 4,209,335, Cl. 106-89.000.
Sakata, Isao: *See*—
Nomura, Takao; Taguchi, Yoshio; Kobayashi, Kazuo; and Sakata, Isao, 4,209,564, Cl. 428-315.000.
Sakharova, Lidia A.: *See*—
Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.
Sakimoto, Junji: *See*—
Fujiwara, Toshio; Sakimoto, Junji; and Yoshioka, Hisaya, 4,209,268, Cl. 405-147.000.
Sakura Color Products Corp.: *See*—
Tsujio, Shinji, 4,209,332, Cl. 106-19.000.
Sakurada, Ichio: *See*—
Kajinaga, Yoshihiro; Nitta, Minoru; Sakurada, Ichio; and Ito, Shunji, 4,209,320, Cl. 75-0.5BA.
Sakuragi, Johji: *See*—
Ohyama, Masumi; Sakuragi, Johji; Aono, Masanori; and Ochi, Takeshi, 4,209,783, Cl. 340-152.00T.
Salmela, Jouko; Bergmann, Erik; and Heikkila, Tauno, to Teollisuusmittaus OY. Apparatus for conveying and processing strip material, especially paper trim. 4,209,362, Cl. 162-264.000.
Samborski, Bruce A.; and Wiley, Roy O., to Westinghouse Electric Corp. Ground fault receptacle reset button. 4,209,762, Cl. 335-18.000.
Sampathkumar, Krishnaswamy: *See*—
Feldman, Paul L.; and Sampathkumar, Krishnaswamy, 4,209,306, Cl. 55-2.000.
Sampson, Ernest C., to Eaton Corporation. Brake installation template. 4,208,798, Cl. 33-180.0AT.
Sams, Gerald L.: *See*—
Black, William R., Sr.; and Sams, Gerald L., 4,208,837, Cl. 49-56.000.
Sanders Associates, Inc.: *See*—
Saunders, Roger I., 4,209,151, Cl. 244-138.00R.
Sanders, James M.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Sandos, Michael S., to Bear Body, Inc. Floatable fabric wallet. 4,209,048, Cl. 150-38.000.
Sandvik Aktiebolag: *See*—
Prusic, Milinko, 4,208,953, Cl. 92-193.000.
Sanford, Paul F.: *See*—
Brandeberry, Raymond L.; Ginther, Lawrence B.; Lehr, Glen J.; and Sanford, Paul F., 4,209,556, Cl. 427-330.000.

Sankyo Company Limited: *See*—
Tomita, Kazuo; Murakami, Tadashi; Tsuji, Hideakira; Matsumoto, Keigo; Fujita, Katsuhiro; and Yokoi, Shinji, 4,209,512, Cl. 424-200.000.
Sanyo Chemical Industries, Ltd.: *See*—
Ii, Motohiko; Goto, Yoshio; Suzuki, Takashi; and Kubo, Sotoo, 4,209,398, Cl. 210-58.000.
Sanyo Electric Co., Ltd.: *See*—
Arita, Yoichi; Yada, Shinko; and Onishi, Ko, 4,209,376, Cl. 204-195.00C.
Sarantakis, Dimitrios, to American Home Products Corporation. Polypeptides related to somatostatin. 4,209,426, Cl. 260-8.000.
Sarges, Reinhard, to Pfizer Inc. Benzimidazolone derivatives. 4,209,527, Cl. 424-273.00B.
Sarges, Reinhard, to Pfizer Inc. Hydantoin derivatives as therapeutic agents. 4,209,630, Cl. 548-309.000.
Sasaki, Yoshiyuki: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Sato, Hidetoshi: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,209,670, Cl. 179-100.41D.
Sato, Hiroshi; Tojima, Hideto; and Yasui, Seimei, to Sumitomo Chemical Company, Limited. α-Olefin dimer isomerization using organohalogens. 4,209,653, Cl. 585-313.000.
Sato, Kazuhiro: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,209,670, Cl. 179-100.41D.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure printing mechanism for hand labeler. 4,208,964, Cl. 101-291.000.
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, to Konishiroku Photo Industry Co., Ltd.; and Mitsubishi Chemical Industries Limited. Dye image forming process. 4,209,328, Cl. 430-225.000.
Satou, Kazuo; Ueno, Mitsuhiko; and Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Semiconductor integrated circuit device in which difficulties caused by parasitic transistors are eliminated. 4,209,713, Cl. 307-200.00B.
Sauer, Gale E., to Roblin Industries, Inc. Suspended ceiling system. 4,208,851, Cl. 52-573.006.
Saunders, Roger I., to Sanders Associates, Inc. Banner stabilizer method and apparatus for air dropped articles. 4,209,151, Cl. 244-138.00R.
Savage, James G., to Xerox Corporation. Print wheel loading apparatus. 4,209,262, Cl. 400-144.200.
Sawada, Yoshio: *See*—
Kawasaki, Masahiro; and Sawada, Yoshio, 4,209,245, Cl. 354-51.000.
Sawko, Paul M., to United States of America, National Aeronautics and Space Administration. Structural wood panels with improved fire resistance. 4,209,561, Cl. 428-114.000.
Sawoska, David A.: *See*—
Kukanskis, Peter E.; Grunwald, John J.; Ferrier, Donald R.; and Sawoska, David A., 4,209,331, Cl. 106-1.230.
Sayre, Robert K., to Westinghouse Electric Corp. Heliostat assemblies. 4,209,231, Cl. 350-292.000.
Scalaire S.A.: *See*—
Mocelin, Jean-Claude, 4,209,196, Cl. 296-219.000.
Scandia Packaging Machinery Company: *See*—
Anderson, Andrew W., 4,208,932, Cl. 83-303.000.
Scarpiello, Daniel A.; and Herzing, Anthony G., to SCM Corporation. High melting fat composition and process of making. 4,209,547, Cl. 426-607.000.
Schaar, Charles H., to Colgate-Palmolive Company. Diaper with elastic fastener. 4,209,016, Cl. 128-287.000.
Schad, Robert D.: *See*—
Rees, Herbert; and Schad, Robert D., 4,209,290, Cl. 425-547.000.
Schadlich, Fritz, to Robert Bosch GmbH. Tachogenerator for rotating machinery. 4,209,719, Cl. 310-42.000.
Schapiro, Abraham. Instantized blend of caseinate and soya protein. 4,209,545, Cl. 426-580.000.
Schechter, Michael M.: *See*—
Simko, Aladar O.; Choma, Michael A.; and Schechter, Michael M., 4,208,995, Cl. 123-119.00A.
Scherf, Gerald F., to Owens-Illinois, Inc. Contour and width gauge for paneled containers. 4,209,387, Cl. 209-530.000.
Schering Aktiengesellschaft: *See*—
Nusslein, Ludwig; and Arndt, Friedrich, 4,209,627, Cl. 548-130.000.
Vorbruggen, Helmut, 4,209,613, Cl. 536-23.000.
Schering Corporation: *See*—
Steinman, Martin; and Wong, Yee S., 4,209,464, Cl. 260-578.000.
Schierz, Winfried; and Butenschon, Claus, to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H. Semiconductor mounting producing efficient heat dissipation. 4,209,799, Cl. 357-81.000.
Schiewer, Edwin: *See*—
Heimerl, Wilfried; Schiewer, Edwin; and De, Amal K., 4,209,421, Cl. 252-301.10W.
Schindler, Earle R., to Resco, Inc. Method of measuring long shaft torque. 4,208,904, Cl. 73-136.00A.
Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensing element. 4,209,378, Cl. 204-195.00S.
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Thrust bearing assembly. 4,209,207, Cl. 308-9.000.
Schirmer, Henry G., to W. R. Grace & Co. Closure for flexible receptacle. 4,208,855, Cl. 53-417.000.
Schleicher, Louis C. Punch, die and anvil set. 4,208,776, Cl. 29-243.500.
Schlumberger Technology Corporation: *See*—
Hart, Herbert J., 4,208,966, Cl. 102-20.000.
Huchital, Gerald S., 4,209,747, Cl. 324-338.000.
Schmerzler, Lawrence J. Expander-compressor transducer. 4,208,885, Cl. 62-403.000.
Schmidt, David C.: *See*—
James, Randall P.; and Schmidt, David C., 4,209,250, Cl. 355-18.000.
Schmidt, Klaus, to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft. Grill device. 4,208,959, Cl. 99-421.0HV.
Schmidt, Paul J.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,209,618, Cl. 544-153.000.
Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,209,543, Cl. 426-538.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.
Schmolke, Karl H., to John D. Hollingsworth on Wheels, Inc. Reclothable beater roll for open end spinning machines. 4,208,767, Cl. 19-97.000.
Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,209,634, Cl. 560-116.000.
Schonberger, Reiner: *See*—
Feldle, Kurt; and Schonberger, Reiner, 4,209,721, Cl. 310-67.00R.
Schreiber, William L.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Schrenk, Hartmut, to Siemens Aktiengesellschaft. Non-volatile memory which can be erased word by word constructed in the floating gate technique. 4,209,849, Cl. 365-182.000.
Schroder, Gerhard, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Pivot bearing arrangement for doors. 4,208,763, Cl. 16-151.000.
Schroeder, Henry G.; and Hasselvander, Henry F., to Innovative Technology Inc. Single shot microfiche film duplicator. 4,209,251, Cl. 355-110.000.
Schuck, Paul R., to J. I. Case Company. Control mechanism for skid steer vehicle. 4,209,071, Cl. 180-6.480.
Schuierer, Erich; Batheit, Heinrich; and Broll, Richard, to Hoechst Aktiengesellschaft. Fire extinguishing agent. 4,209,407, Cl. 252-3.000.
Schulze, Andreas; and Oediger, Hermann, to Haarman & Reimer GmbH. Process for the preparation of piperonylidenecrotonic acid amides. 4,209,446, Cl. 260-340.50R.
Schulze, Andreas: *See*—
Oediger, Hermann; and Schulze, Andreas, 4,209,445, Cl. 260-340.50R.
Schulze, Siegmund: *See*—
Deeg, Helmut; and Schulze, Siegmund, 4,209,311, Cl. 55-294.000.
Schumann, Fritz: *See*—
Wehde, Heinz; Schumann, Fritz; and Wulfhorst, Burkhard, 4,209,778, Cl. 340-677.000.
Schurger, Rainer: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, 4,209,208, Cl. 308-20.000.
Schwartz, Kenneth P. Self lubricating vane for a rotary vane cooling system. 4,209,286, Cl. 418-13.000.
Schwartz, Reinhard: *See*—
Hofmann, Eberhard; Schwartz, Reinhard; and Wagner, Berthold, 4,208,998, Cl. 123-139.0AZ.
Schwartz, Robert C., to Talijon, Inc. Audio-time plotting equipment and method. 4,208,809, Cl. 35-1.000.
Schwarz, Otto: *See*—
Ruegg, Franz; and Schwarz, Otto, 4,209,120, Cl. 226-32.000.
Schwarz, Walter. Method of producing shaped bodies of reinforced synthetic resin. 4,209,482, Cl. 264-135.000.
Schwemin, Arnold J., to Energy Dynamics, Inc. Heat exchanger. 4,209,061, Cl. 165-10.000.
SCM Corporation: *See*—
Scarpiello, Daniel A.; and Herzing, Anthony G., 4,209,547, Cl. 426-607.000.
Traynor, Sean G.; and Marcelin, George, 4,209,554, Cl. 427-230.000.
Weber, Leon, 4,209,430, Cl. 260-23.00H.
Sefton, Michael V., to Canadian Patents and Development Limited. Dispensing device for medicaments. 4,209,014, Cl. 128-214.00F.
Segawa, Kazuyoshi, to Toshiba Kikai Kabushiki Kaisha. Injection molding machines. 4,208,879, Cl. 60-547.00R.
Seibert, Gerhard. Apparatus for winding or unwinding of a cord-shaped material. 4,209,140, Cl. 242-79.000.
Seignemartin, Ewald E., to Key Tronic Corporation. Capacitive keyswitch. 4,209,819, Cl. 361-288.000.
Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,209,242, Cl. 354-25.000.

Seitz, Charles L.: *See*—
Sutherland, Ivan E.; and Seitz, Charles L., 4,209,240, Cl. 354-4.000.
Sekiguchi, Kiichi. Drive-in theater audio system. 4,209,663, Cl. 179-1.0DD.
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, to Asahi Kasei Kogyo Kabushiki Kaisha. Electrolysis of aqueous alkali metal halide solution. 4,209,367, Cl. 204-98.000.
Seko, Maomi; Ogawa, Shinsaku; and Takemura, Reiji, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for electrolysis of sodium chloride by use of cation exchange membrane. 4,209,369, Cl. 204-98.000.
Sellstedt, John H.; Guinosso, Charles J.; Klaubert, Dieter H.; and Shriver, David A., to American Home Products Corporation. Antisecretory oxamic acid esters. 4,209,528, Cl. 424-304.000.
Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H.: *See*—
Schierz, Winfried; and Butenschon, Claus, 4,209,799, Cl. 357-81.000.
Senes, Michel: *See*—
Le Goff, Yannick; Senes, Michel; and Hamon, Christian, 4,209,424, Cl. 252-474.000.
Senturia, Stephen D., to Massachusetts Institute of Technology. Charge-flow transistors having metallization patterns. 4,209,796, Cl. 357-23.000.
Seppa, Dale K., to Sperry Corporation. Memory error logger which sorts transient errors from solid errors. 4,209,846, Cl. 364-900.000.
Seragnoli, Enzo, to G.D. Societa per Aziori. Device for folding blanks of sheet material in machines for packaging articles, particularly cigarettes, into hinged-lid packets. 4,208,854, Cl. 53-575.000.
Serrus, Max: *See*—
Marthe, Louis; Mondeil, Lucien; and Serrus, Max, 4,209,740, Cl. 324-61.00R.
Servis Domestic Appliances Limited: *See*—
Wood, Raymond F., 4,208,890, Cl. 68-12.00R.
Sethy, Anil, to International Paper Company. Process for removing residual oxygen from oxygen-bleached pulp. 4,209,359, Cl. 162-29.000.
Seymour, Samuel L., to PPG Industries, Inc. Controlling glass sheet buffeting during quenching. 4,209,314, Cl. 65-104.000.
Sgs-Ates Componenti Elettronici S.p.A.: *See*—
Beretta, Giacomo, 4,209,798, Cl. 357-70.000.
Shackelford, John T., to Optronics, Inc. Lamp. 4,209,825, Cl. 362-299.000.
Shah, Syed M. M.; and Luksas, Anthony J., to Beatrice Foods Co. Food composition containing whey colloidal precipitate. 4,209,503, Cl. 424-49.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Polyesteramides derived from bis-oxamidodiols and dicarboxylic acids. 4,209,607, Cl. 528-291.000.
Shapiro, Howard E.: *See*—
Merz, Kenneth M.; and Shapiro, Howard E., 4,209,764, Cl. 338-308.000.
Sharma, Mahindar N.: *See*—
White, Eugene B.; and Sharma, Mahindar N., 4,209,396, Cl. 210-47.000.
Sharp Kabushiki Kaisha: *See*—
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; Takechi, Sadatoshi; and Uede, Hisashi, 4,209,770, Cl. 340-763.000.
Miyamae, Ryuichi, 4,208,918, Cl. 73-708.000.
Yoshida, Yoshisaburo, 4,209,735, Cl. 320-2.000.
Sharpe, Robert L., to Dana Corporation. Method for grinding piston rings. 4,208,845, Cl. 51-290.000.
Shaub, Harold: *See*—
Winans, Esther D.; Ryer, Jack; Gutierrez, Antonio; and Shaub, Harold, 4,209,411, Cl. 252-56.00D.
Shaw, Robert F. Surgical instrument having self-regulating radiant heating of its cutting edge and method of using the same. 4,209,017, Cl. 128-303.100.
Shaw, Thomas L.: *See*—
Evans, David V.; Davis, John P.; and Shaw, Thomas L., 4,208,877, Cl. 60-495.000.
Shelcore, Inc.: *See*—
Strauss, Manfred, 4,208,831, Cl. 46-1.00B.
Sheldon, Gordon P., to Cooper Industries, Inc. Bit retainer for screwdriver. 4,209,182, Cl. 279-75.000.
Shell Oil Company: *See*—
Roman, Steven A., 4,209,642, Cl. 568-591.000.
Shenker, Jack D., to Babcock & Wilcox Company. Lance construction for boiler cleaning apparatus. 4,209,028, Cl. 134-56.00R.
Shepherd, L. Clay. Track wiper for sliding shower door assembly. 4,208,755, Cl. 15-160.000.
Shibata, Norio: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,209,670, Cl. 179-100.41D.
Shifman, Jerry: *See*—
Jasinski, Dennis N.; Shifman, Jerry; and Mather, Selwyn, 4,209,285, Cl. 417-571.000.
Shiki, Haruo; Saito, Yoshiteru; Katsuki, Marefumi; and Wakino, Kikuo, to Nippon Electric Co., Ltd.; and Murata Manufacturing Co., Ltd. Ceramic capacitors. 4,209,754, Cl. 330-307.000.
Shimamoto, Mitoshi: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Akatsuka, Tadami; Kodama, Osamu; and Shimamoto, Mitoshi, 4,209,459, Cl. 260-507.00R.
Shimazu, Takumi: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Shimizu, Hidetoshi; and Horie, Mitsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake booster for wheeled vehicles. 4,208,872, Cl. 60-280.000.
Shimizu, Tadao: *See*—
Yanagida, Hiroaki; Nagai, Masayuki; and Shimizu, Tadao, 4,209,477, Cl. 264-62.000.
Shimizu, Toshimasa: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Shin, Kju H., to Ethyl Corporation. Preparation of acetals. 4,209,643, Cl. 568-594.000.
Shinko, Toyotaro: *See*—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensing element. 4,209,377, Cl. 204-195.00S.
Shirahata, Kunikatsu: *See*—
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.
Shirai, Shogo; and Onoguchi, Akira, to Kabushiki Kaisha Akashi Seisakusho. Multiple electron lens. 4,209,702, Cl. 250-396.0ML.
Shiraishi, Takeichi: *See*—
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, ituji, 4,209,601, Cl. 526-114.000.
Kuroda, Nobuyuki; Shiraishi, Takeichi; Itoh, Akio; Matsuura, Kazuo; and Miyoshi, Mituji, 4,209,602, Cl. 526-114.000.
Shirinian, Jack: *See*—
Corinaldi, Giorgio; and Shirinian, Jack, 4,209,117, Cl. 224-224.000.
Shiseki, Yutaka. Shock starting type simplified phonograph. 4,209,174, Cl. 274-1.00A.
Shomura, Takashi: *See*—
Inouye, Shigeharu; Shomura, Takashi; Kojima, Michio; and Hisamatsu, Takashi, 4,209,509, Cl. 424-119.000.
Shporn, Shaul: *See*—
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, 4,209,131, Cl. 239-68.000.
Shriver, David A.: *See*—
Sellstedt, John H.; Guinosso, Charles J.; Klaubert, Dieter H.; and Shriver, David A., 4,209,528, Cl. 424-304.000.
Shue, James W.: *See*—
Erdman, Ann L.; and Shue, James W., 4,208,888, Cl. 63-2.000.
Shulman, Joel I., to Procter & Gamble Company, The. Triaryl-phosphine compounds. 4,209,468, Cl. 568-13.000.
Shurtleff, Harold R.: *See*—
Dexter, Jeffrey L.; Fairweather, William E.; and Shurtleff, Harold R., 4,208,760, Cl. 15-302.000.
Shuster, Edward J.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Siarto, Andrew V., to Siarto Machine & Tool Co., Inc. Machine tool. 4,209,088, Cl. 198-345.000.
Siarto Machine & Tool Co., Inc.: *See*—
Siarto, Andrew V., 4,209,088, Cl. 198-345.000.
Siden, Dennis C., to Raychem Corporation. Splicing electrical wires. 4,208,788, Cl. 29-862.000.
Sieckmann, Joachim: *See*—
Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, 4,209,323, Cl. 75-48.000.
Siegenia-Frank KG: *See*—
Kleine, Ewald; and Roth, Ernst, 4,208,838, Cl. 49-192.000.
Siemens Aktiengesellschaft: *See*—
Becker, Friedbert; Kloeber, Peter; and Steinkamp, Johann A., 4,209,749, Cl. 455-56.000.
Becker, Michael, 4,209,757, Cl. 333-17.00R.
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.
Goetzl, Horst; and Rattner, Manfred, 4,209,406, Cl. 250-402.000.
Hochrath, Hans, 4,209,664, Cl. 179-2.510.
Kattner, Erich, 4,209,794, Cl. 346-140.00R.
Krimmel, Eberhard F., 4,209,704, Cl. 250-423.00R.
Muller, Bruno; Baumgartl, Ulrich; and Kohler, Werner, 4,209,743, Cl. 324-96.000.
Schrenk, Hartmut, 4,209,849, Cl. 365-182.000.
Steiner, Herbert, 4,209,662, Cl. 178-69.00A.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Ruegg, Franz; and Schwarz, Otto, 4,209,120, Cl. 226-32.000.
Simko, Aladar O.; Choma, Michael A.; and Schechter, Michael M., to Ford Motor Company. Fuel injection fuel flow control system. 4,208,995, Cl. 123-119.00A.
Simokat, Frank L., to TII Industries, Inc. Subscriber drop-connected circuits. 4,209,667, Cl. 179-17.00A.
Simon, Joseph F.; and Wolf, William D., to Monsanto Company. Debeling hollow articles. 4,209,344, Cl. 134-23.000.

Simonelis, Peter A.: *See—*
Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., 4,208,976, Cl. 113-121.00A.

Sinelnikova, Svetlana E.: *See—*
Abramov, Jury M.; Kozlov, Alexandr N.; and Sinelnikova, Svetlana E., 4,209,746, Cl. 324-301.000.

Singer Company, The: *See—*
Rohner, Michel A.; and Florence, Judit K., 4,208,810, Cl. 35-10.240.

Sinnott, Richard. Fire fighting device. 4,208,793, Cl. 30-299.000.

Sinram, Edward W.: *See—*
Bell, David W.; and Sinram, Edward W., 4,209,261, Cl. 400-196.100.

Sisson, James B., to Procter & Gamble Company, The. Method for making random laid bonded continuous filament cloth. 4,209,563, Cl. 428-288.000.

Skaalen, Clifford I.: *See—*
Mack, Kit L.; and Skaalen, Clifford I., 4,208,979, Cl. 114-264.000.

SKF Industries, Inc.: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, 4,209,208, Cl. 308-20.000.

SKF Kugellagerfabriken GmbH: *See—*
Feldle, Kurt; and Schonberger, Reiner, 4,209,721, Cl. 310-67.00R.

Skidmore, Lawrence M., to Armour and Company. Method and machine for slicing materials. 4,208,933, Cl. 83-367.000.

Slater Steel Industries Limited: *See—*
Micucci, Joseph; and Kuras, Rudolf F., 4,209,277, Cl. 414-330.000.

Smietana, Zbigniew: *See—*
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.

Smith, Bruce W., to Lockheed Corporation. Drills with chip collectors. 4,209,069, Cl. 173-75.000.

Smith, Clarence G., to Mobil Oil Corporation. Apparatus for controlling the transfer of seismic data from magnetic tape storage to a photographic recording. 4,209,855, Cl. 367-71.000.

Smith, D. V.: *See—*
Costanzo, Kathryn N., 4,208,986, Cl. 119-106.000.

Smith International, Inc.: *See—*
Newcomb, Alan L., 4,209,121, Cl. 228-49.00R.

Smith-Johannsen, Robert, to Norcem A/S. Cement compositions. 4,209,339, Cl. 106-106.000.

Smith, Lawrence E., to RCA Corporation. Regulated deflection circuit. 4,209,732, Cl. 315-400.000.

Smith, Samuel C. Chimney cleaner. 4,208,756, Cl. 15-243.000.

Smith, Walter J., to Huck Manufacturing Company. Multigrip fastener. 4,208,943, Cl. 85-7.000.

SmithKline Corporation: *See—*
Faulkner, Albert A., 4,209,256, Cl. 356-246.000.

Smucker, Don M. Knee inflection apparatus and method for its use. 4,209,012, Cl. 128-133.000.

Snedkerud, Ole; and Wyss, Jurg, to Patelhold Patentverwertungs- & Elektro-Holding AG. Method and apparatus for the automatic matching of a transmitter to an antenna. 4,209,758, Cl. 333-17.00M.

Snedkerud, Ole, to BBC Brown Boveri & Company Limited. Rotatable aerial installation mounted on a mast with remote mechanical drive. 4,209,789, Cl. 343-765.000.

SNIA VISCOSA Societa Nazionale Industrial Applicazioni Viscosa S.p.A: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,209,606, Cl. 528-167.000.

Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
Bambara, Mario; and Ravagnati, Aldo, 4,209,841, Cl. 364-200.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Busacca, Guido; Burrascano, Roberto; Meli, Vicenzo; and Migliaccio, Salvatore, 4,209,755, Cl. 331-83.000.

Societe Anonyme Automobiles Citroen: *See—*
Ducrot, Pol B. L.; and Cloup, Jean-Paul, 4,209,720, Cl. 310-45.000.

Societe Anonyme DBA: *See—*
Gerard, Jean-Louis, 4,209,083, Cl. 188-73.600.

Societe Chimique de la Grande Paroisse, Azote et Products Chimiques: *See—*
Le Goff, Yannick; Senes, Michel; and Hamon, Christian, 4,209,424, Cl. 252-474.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Marthe, Louis; Mondeil, Lucien; and Serrus, Max, 4,209,740, Cl. 324-61.00R.

Soderland, Bengt, to AB Gustavsberg. Card box. 4,209,093, Cl. 206-425.000.

Soga, Kazuo: *See—*
Ikeda, Sakuji; and Soga, Kazuo, 4,209,628, Cl. 548-229.000.

Solargenics, Inc.: *See—*
Collins, David L., 4,209,007, Cl. 126-422.000.

Solem, Richard H.: *See—*
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,208,907, Cl. 73-190.00R.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A., 4,209,718, Cl. 310-13.000.

Solvay & Cie.: *See—*
Lorquet, Robert, 4,209,470, Cl. 260-652.00P.
Tytgat, Daniel; Noel, Stephane; and Clerbois, Lucien, 4,209,600, Cl. 526-74.000.

Somborn, Gunter; Kluge, Johannes; Rotthaus, Dirk; Hasselmann, Heinz; and Lichtenvort, Uwe, to DEMAG, Aktiengeselischaft. Pull switch. 4,209,681, Cl. 200-157.000.

Sonnino, Carlo B.: *See—*
Moglia, Henry J.; and Sonnino, Carlo B., 4,209,686, Cl. 219-375.000.

Sonoda, Tomiya: *See—*
Washida, Hiroshi; Sonoda, Tomiya; and Nakamura, Yuzo, 4,209,705, Cl. 250-486.000.

Soodak, Charles; and Priarone, Paul, to Baxter Travenol Laboratories, Inc. Nose seal assembly. 4,209,176, Cl. 277-95.000.

Sooy, Walter R.: *See—*
Linford, Gary J.; Peressini, Eugene R.; and Sooy, Walter R., 4,209,689, Cl. 455-609.000.

Souma, Tsunenori: *See—*
Tazaki, Shigemitsu; Yamataka, Akihiro; Souma, Tsunenori; and Kusumoto, Tadao, 4,209,850, Cl. 365-189.000.

Spalding, George T., to Diemakers, Inc. Process for producing master cylinders. 4,209,058, Cl. 164-100.000.

Speas, Charles A., to Hedwin Corporation. Drum assemblies with preformed inserts. 4,209,104, Cl. 220-71.000.

Spector, George: *See—*
Hall, H. Hedley; and Spector, George, 4,208,828, Cl. 43-114.000.

Spence, John: *See—*
Torode, Allan J.; Harden, David; and Spence, John, 4,209,513, Cl. 424-228.000.

Sperry Corporation: *See—*
Osder, Stephen S., 4,209,734, Cl. 318-564.000.
Seppa, Dale K., 4,209,846, Cl. 364-900.000.
Workman, David B., 4,209,342, Cl. 134-10.000.

Sperry Rand Corporation: *See—*
Alcorn, Thomas E., Jr.; and Konsevich, James L., 4,209,838, Cl. 364-200.000.
McAllister, Ronald L.; Priepke, Edward H.; and Wagstaff, Robert A., 4,209,137, Cl. 241-221.000.
Rowland-Hill, Edward W., 4,208,858, Cl. 56-14.600.
Waldrop, T. William; and Campbell, Willis R., 4,208,862, Cl. 56-341.000.

Spielvogel, Bernard F.; Mc Phail, Andrew T.; Hall, Iris H.; Wisian-Neilson, Patty; and Hargrave, Karl D., to United States of America, Army. Ammonia-cyanoborane, sodium iodide complex. 4,209,510, Cl. 424-148.000.

Spoor, Martin, to Bofors America, Inc. Miniature load beams. 4,208,905, Cl. 73-141.00A.

Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Flavoring with a mixture of acetyl hydrindacenes. 4,209,543, Cl. 426-538.000.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.

Spurling, J. Jeffrey, to Corning Glass Works. Glass forming apparatus. 4,209,315, Cl. 65-145.000.

Square D Company: *See—*
McGinnis, James P., 4,209,817, Cl. 361-94.000.
Zylstra, Henry J.; and Borrett, Ronald D., 4,209,818, Cl. 361-96.000.

Stafford, Donald C.: *See—*
McCabe, John S.; Stafford, Donald C.; and Laverman, Royce J., 4,209,271, Cl. 405-210.000.

Stahl, Otto, to Georg Menshen & Co. KG. Two-part delivery outlet closure for containers. 4,209,115, Cl. 222-536.000.

Stahlmann, Rudolf: *See—*
Hubsch, Gunter; and Stahlmann, Rudolf, 4,208,968, Cl. 102-92.700.

Stamicarbon, B.V.: *See—*
Creemers, Henricus M. J. C.; and Henskens, Hubertus J. G., 4,209,436, Cl. 260-29.7PT.
Hendriks, Petrus F. A. M., 4,209,591, Cl. 435-288.000.
van de Leemput, Lambertus J. M. A., 4,209,603, Cl. 526-129.000.

Stanczak, John S.: *See—*
Rao, G. R. Mohan; Stanczak, John S.; Lien, Jih-Chang; and Bhatia, Shyam, 4,208,781, Cl. 29-577.00C.

Stanley Works, The: *See—*
Brown, Martin M.; and Bies, Sylvester W., 4,208,803, Cl. 33-348.000.

Stark, Terrence L., to General Motors Corporation. Fabricated engine main bearing caps. 4,209,209, Cl. 308-23.000.

Starkey, David T.: *See—*
Wangard, William; and Starkey, David T., 4,208,939, Cl. 84-1.170.

Starkey, Henry L. Adjustable animal trap. 4,208,827, Cl. 43-87.000.

Starks, Charles V. Sewage pulverizer. 4,209,135, Cl. 241-46.170.

Starks, Emmett A., to Better-Way Products Company. Stop assembly and system for sliding closures. 4,208,841, Cl. 49-449.000.

Starling, Bobby L., to Pneumafil Corporation. Rotating coiler cleaner. 4,208,762, Cl. 15-312.00R.

Stauffer Chemical Company: *See—*
Irani, Mazin R.; and Darragh, Kirk V., 4,209,497, Cl. 423-315.000.
Photis, James M., 4,209,462, Cl. 260-545.00R.

Stein, Alvin J.: *See—*
Herrington, F. John; and Stein, Alvin J., 4,209,475, Cl. 264-40.100.

Stein, Leonard, to General Electric Company. Selective etching of polymeric materials embodying silicones via reactor plasmas. 4,209,356, Cl. 156-643.000.

Steiner, Ernesto: *See—*
Muhlemann, Hans R.; Steiner, Ernesto; and Brandestini, Marco, 4,208,795, Cl. 433-203.000.

Steiner, Herbert, to Siemens Aktiengesellschaft. Circuit arrangement for scanning the character elements of characters at arbitrarily determinable points, in particular for the correction of teletypewriter characters. 4,209,662, Cl. 178-69.00A.

Steinkamp, Johann A.: *See*—
Becker, Friedbert; Kloeber, Peter; and Steinkamp, Johann A., 4,209,749, Cl. 455-56.000.

Steinman, Martin; and Wong, Yee S., to Schering Corporation. Novel synthesis of 3-amino-2-methylbenzotrifluoride from N-(2-X-5-trifluoromethylphenyl)-S,S-dimethylsulfimide. 4,209,464, Cl. 260-578.000.

Stelmachowski, Wladyslaw: *See*—
Zmojdzin, Andrzej; Urbanski, Kazimierz; Utecht, Edmund; and Stelmachowski, Wladyslaw, 4,209,631, Cl. 548-338.000.

Stelter, Ronald B.; Kulka, Raymond P.; Florczak, John; Simonelis, Peter A.; and Fiala, Edward J., to Continental Group, Inc., The. Tab applicator and bonding apparatus and method of utilizing the same. 4,208,976, Cl. 113-121.00A.

Stenberg, Erik G.; Wahren, Douglas; and Zotterman, Carl, to AB Karlstads Mekaniska Werkstad. Two-sided drainage in a roll-type twin-wire former. 4,209,360, Cl. 162-203.000.

Stephan, Gunter; Birmes, Hartmut; Haus, Artur; and Plaza, Erwin, to Bayer Aktiengesellschaft. Transfer printing process. 4,209,297, Cl. 8-467.000.

Stephan, Leonard P., to Boeing Company, The. Turbulence compensated throttle control system for aircraft having throttle command signal path control means responsive to engine rating control and flare initiation. 4,209,152, Cl. 244-182.000.

Stephenson, Robert L.: *See*—
Booth, Frederick C.; and Stephenson, Robert L., 4,209,142, Cl. 242-107.600.

Stephenson, William J. Wing-mounted aircraft utility doorstop. 4,209,150, Cl. 244-129.100.

Sterling Drug Inc.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,209,618, Cl. 544-153.000.
Diana, Guy D.; and Carabateas, Philip M., 4,209,526, Cl. 424-273.00P.

Stevens, Bryce L.: *See*—
Lochmann, Robert L.; and Stevens, Bryce L., 4,209,284, Cl. 417-366.000.

Stewart, Charles J., Jr., to Commonwealth Associates Inc. Apparatus for dimensional gauging of angular members. 4,208,797, Cl. 33-180.00R.

Stewart, George W., Jr., to Ford Aerospace & Communications Corp. Prismatic beam rotator for an optical beam projector. 4,209,224, Cl. 350-6.400.

Stewart, Joe W., to A. O. Smith Corporation. Corrosion resistant galvanic coating. 4,209,555, Cl. 427-292.000.

Stipsits, Gunter: *See*—
Beck, Wolfgang; Herzog, Horst; and Stipsits, Gunter, 4,209,779, Cl. 340-683.000.

Stirling, Robert, to Electricity Council, The. Compressors for heat pumps. 4,208,883, Cl. 62-192.000.

Stites, David G.; Flint, John R.; and Kreuser, Michael L., to Bell & Howell Company. Microfilm transport with shuttered lens and glass flat control. 4,209,238, Cl. 353-85.000.

Stoddart, Hugh F., to Union Carbide Corporation. Nuclear transverse sectional brain function imager. 4,209,700, Cl. 250-363.00S.

Stolyarov, Nikolai A.: *See*—
Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.

Stone, Richard. Backhoe bucket extension device. 4,208,814, Cl. 37-117.500.

Stover, Carole S., to Occidental Research Corporation. Method for reducing the nitrogen content of shale oil with a selective solvent comprising an organic acid and a mineral acid. 4,209,385, Cl. 208-254.00R.

Strauss, Manfred, to Shelcore, Inc. Driving simulator toy. 4,208,831, Cl. 46-1.00B.

Strongwater, Murray. Genuine leather fabric and method for making same. 4,208,744, Cl. 2-163.000.

Stroud, Henry J. F.: *See*—
Conway, Henry L.; Hargis, John A.; and Stroud, Henry J. F., 4,209,305, Cl. 48-213.000.

Strunk, Richard J.; Hubbard, Winchester L.; and Ma, Shih-Yu, to Uniroyal, Inc. Organotin sulfinates as insecticides and acaricides. 4,209,452, Cl. 260-429.700.

Stypulkowski, Henryk: *See*—
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.

Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Nazarov, Boris V. Air-operated self-propelling rotary-percussive downhole drill. 4,209,070, Cl. 173-78.000.

Sugai, Hiroshi; and Nakayama, Snoji, to Kabushiki Kaisha Morita Seisakusho. Air bearing for a dental handpiece. 4,209,293, Cl. 433-132.000.

Sugalski, Raymond K., to General Electric Company. Apparatus for charging camera cells through flash bulb package receptacle. 4,209,737, Cl. 320-2.000.

Sugar, Janos: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.

Sugimoto, Masahiro: *See*—
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, 4,209,612, Cl. 536-17.00R.

Sukhorukov, Vasily V.: *See*—
Gerasimov, Viktor G.; Kljuev, Vladimir V.; Kuznetsov, Viktor B.; Kurozaev, Viktor P.; Rogachev, Viktor I.; Sukhorukov, Vasily V.; Ulitin, Jury M.; and Fedosenko, Jury K., 4,209,744, Cl. 324-241.000.

Sulzer Brothers Limited: *See*—
Deeg, Helmut; and Schulze, Siegmund, 4,209,311, Cl. 55-294.000.

Sumitomo Chemical Company, Limited: *See*—
Atsumi, Toshio; Tarumi, Yuzo; and Kiyohara, Takao, 4,209,525, Cl. 424-273.00R.
Ogino, Shigeo; Yoshida, Noboru; and Kiyohara, Takao, 4,209,507, Cl. 424-116.000.
Sato, Hiroshi; Tojima, Hideto; and Yasui, Seimei, 4,209,653, Cl. 585-313.000.

Sumitomo Electric Industries, Ltd.: *See*—
Nagara, Hiroaki, 4,209,201, Cl. 303-22.00R.
Okita, Koichi, 4,208,745, Cl. 3-1.400.

Sumner, Murray; and Liaukau, Sigitas J., to Bunker Ramo Corporation. Processor controlled editor terminal system and method. 4,209,784, Cl. 340-711.000.

Sundsrud, Gerald J.; and Marteness, Bruce A., to Minnesota Mining and Manufacturing Company. Adhesive tape for protecting electrically insulated rail joint. 4,209,130, Cl. 238-152.000.

Suntech, Inc.: *See*—
Mayes, Fred M., 4,209,400, Cl. 210-65.000.

Supernaw, Irwin R.: *See*—
Arnold, Dan M.; Peelman, Harold E.; Langford, Obie M.; Paap, Hans J.; and Supernaw, Irwin R., 4,209,695, Cl. 250-270.000.

Surko, Walter E., Jr., to Emhart Industries, Inc. Cam lock. 4,208,894, Cl. 70-364.00A.

Sutherland, Ivan E.; and Seitz, Charles L., to California Institute of Technology. Reticle exposure apparatus and method. 4,209,240, Cl. 354-4.000.

Sutton, Gary, to General Signal Corporation. Positive control valve assembly. 4,209,031, Cl. 137-106.000.

Suwala, David W.; and Barabas, Eugene S., to GAF Corporation. Latex blend binder compositions for asbestos sheets. 4,209,562, Cl. 428-271.000.

Suzuki, Takashi: *See*—
Ii, Motohiko; Goto, Yoshio; Suzuki, Takashi; and Kubo, Sotoo, 4,209,398, Cl. 210-58.000.

Suzuki, Yasoji: *See*—
Arimura, Yoshiaki; Egawa, Hideharu; and Suzuki, Yasoji, 4,209,830, Cl. 364-490.000.
Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, 4,209,797, Cl. 357-42.000.
Satou, Kazuo; Ueno, Mitsuhiko; and Suzuki, Yasoji, 4,209,713, Cl. 307-200.00B.

Suzuki, Yoshinobu; and Maruyama, Toshio, to Toyoda Koki Kabushiki Kaisha. Guard device with dressing apparatus for grinding wheel. 4,208,844, Cl. 51-268.000.

Svenska Mejerierhas Riksforening U P A: *See*—
Johansson, Mats S. J., 4,209,546, Cl. 426-603.000.

Svitak, John J.: *See*—
DiLeo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., 4,209,358, Cl. 156-293.000.

Swanson, Andrew R.: *See*—
Nicol, Stuart K.; and Swanson, Andrew R., 4,209,301, Cl. 44-24.000.

Sweet Manufacturing Ltd.: *See*—
Poggemiller, Erhard; and Sweet, Ralph W., 4,209,067, Cl. 172-190.000.

Sweet, Ralph W.: *See*—
Poggemiller, Erhard; and Sweet, Ralph W., 4,209,067, Cl. 172-190.000.

Sweetheart Plastic, Inc.: *See*—
Brown, Gaylord, 4,209,101, Cl. 215-253.000.

Swiss Aluminium Ltd.: *See*—
Akeret, Rudolf, 4,208,897, Cl. 72-253.00R.
Ames, Adolf; Wagner, Alfred; and Zillmann, Ulrich, 4,208,898, Cl. 72-258.000.
Anthony, William H.; and Popplewell, James M., 4,209,059, Cl. 165-1.000.

Synres International B.V.: *See*—
Brady, John W.; Eijsberg, Pieter; and Logemann, Johan D., 4,209,599, Cl. 526-64.000.

Szablowski, Teofil, to General Motors Corporation. Wipe-in terminal for printed circuits. 4,209,220, Cl. 339-217.00S.

Szasz, Kalman: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.

Szecsi, Peter L.: *See*—
Onsager, Olav T.; and Szecsi, Peter L., 4,209,650, Cl. 568-860.000.

Szewczyk, Zenon: *See*—
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.

Szirmai nee Maria Sarkozi, Laszlone: *See*—
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.
Szollosy, Aron: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.
Szpendowski, Jerzy: *See*—
Poznanski, Stefan; Smietana, Zbigniew; Stypulkowski, Henryk; Janicki, Jan; Szpendowski, Jerzy; and Szewczyk, Zenon, 4,209,534, Cl. 426-42.000.
Szporny, Laszlo: *See*—
Kisfaludy, Lajos; Nyeki nee Olga Kuprina, Gyorgyne; Szirmai nee Maria Sarkozi, Laszlone; Karpati, Egon; Gidai, Katalin; and Szporny, Laszlo, 4,209,442, Cl. 260-112.50R.
Taguchi, Yoshio: *See*—
Nomura, Takao; Taguchi, Yoshio; Kobayashi, Kazuo; and Sakata, Isao, 4,209,564, Cl. 428-315.000.
Takada, Haruhiko, to Diesel Kiki Co., Ltd. Rotary vane compressor with start-up pressure biasing vanes. 4,209,287, Cl. 418-93.000.
Takada, Juiiro. Belt clamp for a vehicle passenger restraint belt system. 4,208,770, Cl. 24-136.00K.
Takagi, Shinichi: *See*—
Hashimoto, Kenjiro; Takagi, Shinichi; Okamoto, Harunori; and Miura, Minoru, 4,209,596, Cl. 525-333.000.
Takahara, Takeshi; Matsuura, Susumu; Nishimura, Toshio; and Inoue, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Red pigment-coated phosphor and method of producing the same. 4,209,567, Cl. 428-403.000.
Takahashi, Keiichi; Iida, Takao; Shirahata, Kunikatsu; Sugimoto, Masahiro; Ishii, Shinzo; Okachi, Ryo; and Nara, Takashi, to Abbott Laboratories. Fortimicin factors KF and KG and process for production thereof. 4,209,612, Cl. 536-17.00R.
Takahashi, Norimichi: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.
Takanashi, Hiroshi; Aoyama, Toshimi; and Nakane, Hisashi, to Tokyo Ohka Kogyo Kabushiki Kaisha. Soluble photosensitive resin composition. 4,209,581, Cl. 430-283.000.
Takase, Tsutomu: *See*—
Masuda, Takayoshi; Takase, Tsutomu; Watanabe, Yoshimoto; and Yamazaki, Fumio, 4,209,641, Cl. 568-617.000.
Take, Hiroshi: *See*—
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; Takechi, Sadatoshi; and Uede, Hisashi, 4,209,770, Cl. 340-763.000.
Takechi, Sadatoshi: *See*—
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; Takechi, Sadatoshi; and Uede, Hisashi, 4,209,770, Cl. 340-763.000.
Takeda, Shunichi: *See*—
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Takemoto, Iwao: *See*—
Koike, Norio; Takemoto, Iwao; Akiyama, Toshiyuki; Ando, Haruhisa; Ohba, Shinya; Horiuchi, Masatada; and Kubo, Masaharu, 4,209,806, Cl. 358-213.000.
Takemura, Reiji: *See*—
Seko, Maomi; Ogawa, Shinsaku; and Takemura, Reiji, 4,209,369, Cl. 204-98.000.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,209,588, Cl. 435-78.000.
Taki, Kiyoji, to Kabushiki Kaisha Miura Kumihimo Kojyo. Sling belt. 4,209,044, Cl. 139-411.000.
Talijon, Inc.: *See*—
Schwartz, Robert C., 4,208,809, Cl. 35-1.000.
Tamas, Jozsef: *See*—
Jovanovics, Karola; Dancsi, Lajos; Eckhardt, Sandor; Lorincz, Csaba; Sugar, Janos; Relle nee Somfai, Zsuzsa; Szasz, Kalman; Tamas, Jozsef; and Szollosy, Aron, 4,209,443, Cl. 260-244.400.
Tanaka, Honami: *See*—
Noguchi, Kosaku; Yoshimura, Kiyoharu; Tanaka, Honami; and Hayashi, Masao, 4,209,382, Cl. 208-22.000.
Tanaka, Masatoshi: *See*—
Nitta, Tsuneo; and Tanaka, Masatoshi, 4,209,672, Cl. 179-175.10A.
Taniguchi, Nobuyuki: *See*—
Nanba, Yasuhiro; and Taniguchi, Nobuyuki, 4,209,241, Cl. 354-25.000.
Tantum, James G.: *See*—
Nicholson, John S.; and Tantum, James G., 4,209,638, Cl. 562-401.000.
Tarumi, Yuzo: *See*—
Atsumi, Toshio; Tarumi, Yuzo; and Kiyohara, Takao, 4,209,525, Cl. 424-273.00R.
Taylor, B. Brooks: *See*—
McDaniel, Robert G.; and Taylor, B. Brooks, 4,209,316, Cl. 71-77.000.
Tazaki, Shigemitsu; Yamataka, Akihiro; Souma, Tsunenori; and Kusumoto, Tadao, to Canon Kabushiki Kaisha. Electronic apparatus. 4,209,850, Cl. 365-189.000.
Tchernev, Dimiter I. Magnetic substance having sharp permeability transition temperature, process for making, and apparatus. 4,208,911, Cl. 73-362.0CP.
Team, Inc.: *See*—
Pennington, James E., 4,209,029, Cl. 137-15.000.
Tecumseh Products Company: *See*—
Douglas, James L., 4,209,080, Cl. 184-6.160.
Morse, Robert L.; and Hudson, Sharon J., Jr., 4,208,887, Cl. 62-503.000.
Teel, Willis A., to United States of America, Navy. Transducer. 4,209,766, Cl. 367-155.000.
Teetz, Wolfgang, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Multi-head embroidery machine. 4,208,975, Cl. 112-86.000.
Tegal Corporation: *See*—
Gorin, Georges J.; and Hoog, Josef T., 4,209,357, Cl. 156-643.000.
Teijin Limited: *See*—
Ichikawa, Yataro; Yamaji, Teizo; and Yamamoto, Mamoru, 4,209,644, Cl. 568-596.000.
Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, 4,209,559, Cl. 428-91.000.
Tektronix, Inc.: *See*—
Bender, Herman G.; and Dikeman, James E., 4,209,742, Cl. 324-72.500.
Teldix GmbH: *See*—
Wehde, Heinz; Schumann, Fritz; and Wulfhorst, Burkhard, 4,209,778, Cl. 340-677.000.
Teledyne Industries, Inc.: *See*—
Morrison, Richard L., 4,209,777, Cl. 340-547.000.
Tennes, Bernard R.; and Brown, Galen K., to United States of America, Agriculture. Mechanical shaker assembly for continuous harvesting of fruit. 4,208,861, Cl. 56-328.0TS.
Teollisuusmittaus OY: *See*—
Salmela, Jouko; Bergmann, Erik; and Heikkila, Tauno, 4,209,362, Cl. 162-264.000.
Terashima, Isamu: *See*—
Anzai, Masayasu; and Terashima, Isamu, 4,208,985, Cl. 118-712.000.
Texaco Inc.: *See*—
Arnold, Dan M.; Peelman, Harold E.; Langford, Obie M.; Paap, Hans J.; and Supernaw, Irwin R., 4,209,695, Cl. 250-270.000.
Kessler, Richard V.; and Nolan, John T., Jr., 4,209,304, Cl. 48-202.000.
Prescott, Gerald F.; and Lewis, Charles T., Jr., 4,209,656, Cl. 585-715.000.
Texas Instruments Incorporated: *See*—
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,209,844, Cl. 364-724.000.
Jones, James J., 4,209,202, Cl. 303-106.000.
McElroy, David J., 4,209,729, Cl. 315-169.100.
Ponder, James E., 4,209,851, Cl. 365-190.000.
Puri, Ajay K.; Caruso, Michael J.; Dennison, Stanley M.; and Brown, Jay, 4,209,781, Cl. 340-347.0DA.
Rao, G. R. Mohan; Stanczak, John S.; Lien, Jih-Chang; and Bhatia, Shyam, 4,208,781, Cl. 29-577.00C.
Raymond, Joseph H., Jr., 4,209,716, Cl. 357-59.000.
Wiggins, Richard H., Jr.; and Brantingham, George L., 4,209,836, Cl. 364-718.000.
Texasgulf Canada Ltd.: *See*—
Freeman, George M.; and Robinson, Victor E., 4,209,379, Cl. 204-198.000.
Textron Inc.: *See*—
Flachbarth, Charles T.; and Hadfield, Robert W., 4,209,660, Cl. 174-48.000.
Tezanos, Enrique H.: *See*—
Nogueira, Eduardo D.; Infanzon, Luis A. S.; and Tezanos, Enrique H., 4,209,370, Cl. 204-99.000.
Th. Goldschmidt AG: *See*—
Hameyer, Peter; and Tomczak, Theodor, 4,209,451, Cl. 260-410.800.
Wagner, Helmut; and Hess, Fritz, 4,209,337, Cl. 106-96.000.
Therglas GmbH fur Flachenheizung: *See*—
Bethge, Walther; and Bethge, Dietrich, 4,209,687, Cl. 219-522.000.
Thibault, Lawrence E., to United States of America, Health, Education and Welfare. Hemoglobin-oxygen equilibrium curve analyzer. 4,209,300, Cl. 23-230.00B.
Thies, Hans; and von Kaenel, Fred, to Ciba-Geigy AG. Process for the production of aryl thiols. 4,209,469, Cl. 568-68.000.
Thomas & Betts Corporation: *See*—
Gudaitis, Bernard V.; and Maximoff, Paul, 4,209,217, Cl. 339-75.0MP.
Thomenius, Kai E.; and Bernardi, Richard B., to Picker Corporation. Electronic ultrasonic sector scanning apparatus and method. 4,208,916, Cl. 73-626.000.
Thomson-CSF: *See*—
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,209,725, Cl. 310-313.000.
Dubos, Jacques; and Jacques, Andre, 4,209,227, Cl. 350-96.220.
Guyot, Lucien, 4,209,803, Cl. 358-110.000.
Reymond, Jean-Claude; and Hidalgo, Jean-Luc, 4,209,254, Cl. 356-152.000.
Volluet, Gerard, 4,209,759, Cl. 333-153.000.
TII Industries, Inc.: *See*—
Simokat, Frank L., 4,209,667, Cl. 179-17.00A.
Timex Corporation: *See*—
Polonsky, Samuel, 4,208,867, Cl. 368-262.000.
Timm, Edward E.: *See*—
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,208,907, Cl. 73-190.00R.

Timmis, John P.; and Johnson, Anthony, to Lucas Industries Limited. Vehicle lamp wiper. 4,208,758, Cl. 15-250.040.

Tkachev, Valentin N.; Fishtein, Boris M.; Vlasenko, Viktor D.; and Kazintsev, Nikolai V. Method for induction hard-facing. 4,209,057, Cl. 164-51.000.

Toeniskoetter, Richard H.: *See*—
Gardikes, John J.; and Toeniskoetter, Richard H., 4,209,056, Cl. 164-16.000.

Togulev, Alexandr K.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.

Tojima, Hideto: *See*—
Sato, Hiroshi; Tojima, Hideto; and Yasui, Seimei, 4,209,653, Cl. 585-313.000.

Tokyo Institute of Technology: *See*—
Ikeda, Sakuji; and Soga, Kazuo, 4,209,628, Cl. 548-229.000.

Tokyo Ohka Kogyo Kabushiki Kaisha: *See*—
Takanashi, Hiroshi; Aoyama, Toshimi; and Nakane, Hisashi, 4,209,581, Cl. 430-283.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, 4,209,797, Cl. 357-42.000.
Kobayashi, Nobumitsu; and Iida, Tatsuo, 4,209,821, Cl. 361-341.000.
Nitta, Tsuneo; and Tanaka, Masatoshi, 4,209,672, Cl. 179-175.10A.
Takahara, Takeshi; Matsuura, Susumu; Nishimura, Toshio; and Inoue, Nobuo, 4,209,567, Cl. 428-403.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Aoki, Kiyoshi, 4,209,715, Cl. 307-291.000.
Arimura, Yoshiaki; Egawa, Hideharu; and Suzuki, Yasoji, 4,209,830, Cl. 364-490.000.
Inai, Nobuhiko; and Miura, Akihiko, 4,209,657, Cl. 174-15.0CA.
Ohyama, Masumi; Sakuragi, Johji; Aono, Masanori; and Ochi, Takeshi, 4,209,783, Cl. 340-152.00T.
Satou, Kazuo; Ueno, Mitsuhiko; and Suzuki, Yasoji, 4,209,713, Cl. 307-200.00B.
Washida, Hiroshi; Sonoda, Tomiya; and Nakamura, Yuzo, 4,209,705, Cl. 250-486.000.

Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,209,587, Cl. 435-41.000.

Tolliver, Wilbur E. Pipe joint seal. 4,209,179, Cl. 277-205.000.

Tomczak, Theodor: *See*—
Hameyer, Peter; and Tomczak, Theodor, 4,209,451, Cl. 260-410.800.

Tomita, Kazuo; Murakami, Tadashi; Tsuji, Hideakira; Matsumoto, Keigo; Fujita, Katsuhiro; and Yokoi, Shinji, to Sankyo Company Limited. Mono- and di-thiophosphate esters containing an isoxazolinone ring and compositions and methods containing the same. 4,209,512, Cl. 424-200.000.

Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Company Limited. Farnesyl carboxylic acid α-bisabolol ester, a mucosal stabilizing composition and method of manufacturing the same. 4,209,529, Cl. 424-312.000.

Tomy Kogyo Co., Inc.: *See*—
Yoshida, Kanji, 4,208,830, Cl. 46-1.00R.

Tonomura, Kenichi: *See*—
Ikeda, Tsuneo; and Tonomura, Kenichi, 4,209,805, Cl. 358-175.000.

Toppan Printing Co., Ltd.: *See*—
Masaki, Tatsuo; Miyajima, Keiji; Fukuyoshi, Kenzo; and Kumagai, Hiroji, 4,209,551, Cl. 427-68.000.

Toray Industries, Inc.: *See*—
Kashiro, Yoshikazu; Matsugasako, Kenji; and Kataoka, Shunro, 4,209,481, Cl. 264-24.000.

Torode, Allan J.; Harden, David; and Spence, John, to Burroughs Wellcome Co. Tablet formulation. 4,209,513, Cl. 424-228.000.

Torrens born Le Gargean, Yvette M.: *See*—
Riveron, Andre M.; Astoin, Jacques N.; Marivain, Alain D.; Crucifix born Depheimer, Micheline; Lapotre, Martine M.; and Torrens born Le Gargean, Yvette M., 4,209,517, Cl. 424-248.570.

Toshiba Kikai Kabushiki Kaisha: *See*—
Segawa, Kazuyoshi, 4,208,879, Cl. 60-547.00R.

Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., to Dow Chemical Company, The. Accelerating rate calorimeter and method of operation. 4,208,907, Cl. 73-190.00R.

Toyama, Jinichi: *See*—
Narita, Hiroshi; Ibamoto, Masahiko; and Toyama, Jinichi, 4,209,733, Cl. 318-345.00C.

Toyoda Koki Kabushiki Kaisha: *See*—
Noda, Shigeo; Honma, Hideo; and Kato, Sadamu, 4,209,847, Cl. 364-900.000.
Suzuki, Yoshinobu; and Maruyama, Toshio, 4,208,844, Cl. 51-268.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Horie, Mitsuyuki, 4,208,880, Cl. 60-556.000.
Kobayashi, Toshihiko; and Michioka, Hirohumi, 4,209,495, Cl. 422-176.000.
Nomura, Takao; Taguchi, Yoshio; Kobayashi, Kazuo; and Sakata, Isao, 4,209,564, Cl. 428-315.000.
Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,378, Cl. 204-195.00S.
Shimizu, Hidetoshi; and Horie, Mitsuyuki, 4,208,872, Cl. 60-280.000.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,377, Cl. 204-195.00S.
Yoshida, Toshiro; and Kumai, Teruo, 4,208,997, Cl. 123-136.000.

TransFRESH Corporation: *See*—
Woodruff, Richard E., 4,209,538, Cl. 426-314.000.

Traynor, Sean G.; and Marcelin, George, to SCM Corporation. Polydentate metal salts used in the process for the deactivation of glass surfaces and capillary columns therewith. 4,209,554, Cl. 427-230.000.

Tremeau, Claude, to Crouzet. Apparatus for cutting silicon having a pivoted work carriage utilizing an air bearing. 4,209,005, Cl. 125-13.00R.

Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma or taste of a foodstuff by adding to a foodstuff a mixture of 1-acyl-2,6,6-trimethylcyclohexene derivatives. 4,209,542, Cl. 426-538.000.

Trio Kabushiki Kaisha: *See*—
Miyamoto, Yukihiko, 4,209,714, Cl. 307-229.000.

Triumph Werke Nurnberg, A.G.: *See*—
Jung, Friedrich, 4,209,260, Cl. 400-53.000.

Trofimov, Vladimir A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A., 4,209,718, Cl. 310-13.000.

Trust, Ronald I.; and Albright, Jay D., to American Cyanamid Company. Substituted 6-phenyl-1,2,4-triazolo[4,3-a]pyridines. 4,209,626, Cl. 546-119.000.

TRW, Inc.: *See*—
Merz, Kenneth M.; and Shapiro, Howard E., 4,209,764, Cl. 338-308.000.

Tseng, Ching Y.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D., Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.

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Tsubota, Junjiro. Apparatus for obtaining useful work from wave energy. 4,208,876, Cl. 60-495.000.

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Tsujio, Shinji, to Sakura Color Products Corp. Method for manufacturing pencil leads. 4,209,332, Cl. 106-19.000.

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Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.

Tumey, Lawrence F.; and Zuker, Paul, to FMC Corporation. Frozen confection producing system. 4,209,288, Cl. 425-113.000.

Tupitsyn, Sergei K.: *See*—
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Nazarov, Boris V., 4,209,070, Cl. 173-78.000.

Turner, Maxwell J.: *See*—
Lloyd, Robert; and Turner, Maxwell J., 4,208,789, Cl. 29-650.000.

Twil Handling Systems Limited: *See*—
Jones, Brian G.; and Brown, Barry, 4,209,183, Cl. 280-79.300.

Tyler, Hugh J., to Robertshaw Controls Company. Method of making electrical heater construction. 4,208,785, Cl. 29-611.000.

Tyrrell, Phillip A.: *See*—
Doll, Calvin K.; and Tyrrell, Phillip A., 4,208,955, Cl. 93-44.000.

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Udall, William S., to Dunlop Limited. Tire having beads with air relief means. 4,209,051, Cl. 152-362.00R.

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Ueno, Ichiro, to Victor Company of Japan, Limited. Apparatus for optically recording signals on a recording medium. 4,209,793, Cl. 346-108.000.

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Satou, Kazuo; Ueno, Mitsuhiko; and Suzuki, Yasoji, 4,209,713, Cl. 307-200.00B.

Uhlig, Albert R., to Owens-Illinois, Inc. Safety closure. 4,209,100, Cl. 215-216.000.

Uitti, Kenneth D.: *See*—
Herout, Richard C.; and Uitti, Kenneth D., 4,209,383, Cl. 208-93.000.

Ukihashi, Hiroshi: *See—*
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UMC Industries, Inc.: *See—*
Alford, James R., 4,209,211, Cl. 312-215.000.
Umetsu, Junji: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.
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Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.
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Riveron, Andre M.; Astoin, Jacques N.; Marivain, Alain D.; Crucifix born Depheimer, Micheline; Lapotre, Martine M.; and Torrens born Le Gargean, Yvette M., 4,209,517, Cl. 424-248.570.
Union Carbide Corporation: *See—*
Anderson, James D., 4,209,418, Cl. 252-148.000.
Chwastiak, Stephen, 4,209,500, Cl. 423-447.600.
Clash, David G., 4,209,577, Cl. 429-206.000.
Hoy, Kenneth L.; Jones, Allen P.; and Knopf, Robert J., 4,209,605, Cl. 528-54.000.
Pepe, Enrico J., 4,209,455, Cl. 556-419.000.
Stoddart, Hugh F., 4,209,700, Cl. 250-363.00S.
Wheeler, Thomas N., 4,209,532, Cl. 424-331.000.
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Uniroyal, Inc.: *See—*
Batchelar, Peter H., 4,209,483, Cl. 264-159.000.
Hunter, Byron A., 4,209,632, Cl. 560-13.000.
Strunk, Richard J.; Hubbard, Winchester L.; and Ma, Shih-Yu, 4,209,452, Cl. 260-429.700.
Uniroyal Ltd.: *See—*
Khanna, Som N., 4,209,593, Cl. 521-163.000.
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Hunt, Geoffrey H., 4,209,691, Cl. 250-213.0VT.
United States of America
Agriculture: *See—*
Graham, John S., 4,208,920, Cl. 73-828.000.
Hse, Chung-Yun, 4,209,433, Cl. 260-29.300.
Tennes, Bernard R.; and Brown, Galen K., 4,208,861, Cl. 56-328.0TS.
Army: *See—*
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Betts, Robert E., 4,208,967, Cl. 102-28.0EB.
Cobb, Bernie J., 4,208,948, Cl. 89-1.706.
Kinnamon, Kenneth E., 4,209,519, Cl. 424-258.000.
Pierce, Everette M.; and Allen, Henry C., 4,209,351, Cl. 149-19.100.
Spielvogel, Bernard F.; Mc Phail, Andrew T.; Hall, Iris H.; Wisian-Neilson, Patty; and Hargrave, Karl D., 4,209,510, Cl. 424-148.000.
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Fenimore, Edward E.; and Cannon, Thomas M., 4,209,780, Cl. 340-146.30F.
Gates, Willard G.; and Hale, Gerald J., 4,209,375, Cl. 204-192.00R.
Horton, Richard H.; and Zdeb, John J., 4,209,236, Cl. 353-3.000.
Welch, Kimo M., 4,209,552, Cl. 427-78.000.
Health, Education and Welfare: *See—*
Thibault, Lawrence E., 4,209,300, Cl. 23-230.00B.
Interior: *See—*
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Paice, Derek A., 4,209,739, Cl. 324-424.000.
National Aeronautics and Space Administration: *See—*
Sawko, Paul M., 4,209,561, Cl. 428-114.000.
Navy: *See—*
Bridges, William B., 4,209,752, Cl. 330-4.000.
Flanders, David R., 4,209,767, Cl. 340-26.000.
Keller, Teddy M.; and Griffith, James R., 4,209,458, Cl. 260-465.00F.
Mack, Kit L.; and Skaalen, Clifford I., 4,208,979, Cl. 114-264.000.
Teel, Willis A., 4,209,766, Cl. 367-155.000.
U.S. Philips Corporation: *See—*
Dil, Jan G., 4,209,804, Cl. 358-128.500.
Jack, Alexander G.; Baeten, Franciscus N. C.; and van de Bilt, Johannes, 4,209,726, Cl. 313-174.000.
United Technologies Corporation: *See—*
Duhl, David N.; and Olson, Walter E., 4,209,348, Cl. 148-3.000.
Heynau, Hans A.; and Raber, Peter E., 4,209,255, Cl. 356-152.000.
Lemkey, Franklin D.; Douglas, Frank C.; Golden, Gerald S.; and Brooks, Clyde S., 4,209,008, Cl. 126-452.000.
Voyer, Peter E.; Walsh, Thomas C.; and Grzyb, Joseph, 4,208,774, Cl. 29-156.40R.
Walsh, Thomas C.; Voyer, Peter E.; and Wallace, Francis J., 4,208,777, Cl. 29-418.000.
University of California, The Regents of the: *See—*
Carlson, Robert M., 4,209,299, Cl. 23-230.00R.
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Gilbertson, John R.; and Crout, Richard J., 4,209,533, Cl. 424-343.000.
University Patents, Inc.: *See—*
McDaniel, Robert G.; and Taylor, B. Brooks, 4,209,316, Cl. 71-77.000.
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UOP Inc.: *See—*
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Mitsche, Roy T.; and Pope, George N., 4,209,655, Cl. 585-664.000.
Ward, Dennis J., 4,209,652, Cl. 568-882.000.
Upham, Neil R., to Aeroquip Corporation. Environmental check valve. 4,209,037, Cl. 137-527.000.
Upjohn Company, The: *See—*
Axen, Udo F., 4,209,637, Cl. 560-121.000.
Kelly, Robert C., 4,209,615, Cl. 542-426.000.
Marshall, Vincent P.; Elrod, David W.; and Wiley, Paul F., 4,209,611, Cl. 536-17.00A.
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Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Environmentally protected camera with an interchangeable drawing type finder. 4,209,247, Cl. 354-219.000.
Urbanski, Kazimierz: *See—*
Zmojdzin, Andrzej; Urbanski, Kazimierz; Utecht, Edmund; and Stelmachowski, Wladyslaw, 4,209,631, Cl. 548-338.000.
Utecht, Edmund: *See—*
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Valmet Oy: *See—*
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Van Cleve, Barbara J. Arcuate razor head. 4,208,791, Cl. 30-49.000.
van de Bilt, Johannes: *See—*
Jack, Alexander G.; Baeten, Franciscus N. C.; and van de Bilt, Johannes, 4,209,726, Cl. 313-174.000.
van de Leemput, Lambertus J. M. A., to Stamicarbon, B.V. Catalyst on a support for the polymerization of α-alkenes, particularly ethene. 4,209,603, Cl. 526-129.000.
Vanderbilt University: *See—*
Johnson, Roger A.; and Walseth, Timothy F., 4,209,589, Cl. 435-90.000.
van der Lely, Cornelis. Agricultural machine. 4,208,863, Cl. 56-377.000.
Vanotti, Gerard, to Compagnie Generale des Etablissements Michelin. Articulated mold for objects having undercut parts. 4,209,160, Cl. 249-162.000.
Van Sickle, Norman E. Firearm alignment and support apparatus. 4,208,946, Cl. 89-37.0BA.
Vanvlaenderen, Roger, to N. V. Bekaert S.A. Functional mesh or netting. 4,209,153, Cl. 245-8.000.
Varian Associates, Inc.: *See—*
Nunan, Craig S., 4,209,706, Cl. 250-490.000.
Varma, Ravi K.: *See—*
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,209,614, Cl. 536-25.000.
Varnello, Eduard P.: *See—*
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Varta Batterie Aktiengesellschaft: *See—*
Balters, Helmut, 4,209,578, Cl. 429-206.000.
Vartiak, Joseph F.: *See—*
Baer, William K.; Nielsen, Ralph R.; and Vartiak, Joseph F., 4,208,973, Cl. 111-1.000.
Vasilantone, Michael. Infrared dryer. 4,209,294, Cl. 432-233.000.
Vasiliev, Gennady A.: *See—*
Grigorenko, Anatoly S.; Moroz, Jury A.; Bocharov, Jury A.; Safonov, Anatoly V.; Landyshev, Vladimir V.; Vasiliev, Gennady A.; Sakharova, Lidia A.; and Stolyarov, Nikolai A., 4,208,895, Cl. 72-8.000.
Vasilos, Thomas, to Avco Corporation. Composite structure reinforced in the X, Y, and Z directions and method of making same. 4,209,560, Cl. 428-109.000.
Vasvari, Lelle: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Hermecz, Istvan; Vasvari, Lelle; and Horvath, Agnes, 4,209,622, Cl. 544-282.000.
VDO Adolf Schindling AG: *See—*
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Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,209,768, Cl. 340-26.000.

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Verbiscar, Anthony J.: *See*—
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Schroder, Gerhard, 4,208,763, Cl. 16-151.000.

Vergnault, Joel: *See*—
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Verkaufsgeselischaft fur Teererzeugnisse: *See*—
Echterhoff, Heinz; Gemmeke, Wilfried; Koch, Karl H.; Raulf, Erich; and Sieckmann, Joachim, 4,209,323, Cl. 75-48.000.

Verma, Surendra, to Hughes Aircraft Company. Mass terminable shielded flat flexible cable and method of making such cables. 4,209,215, Cl. 339-17.00F.

Vetco, Inc.: *See*—
Ahlstone, Arthur G., 4,209,193, Cl. 285-309.000.

Victor Company of Japan, Limited: *See*—
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Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato. Hidetoshi, 4,209,670, Cl. 179-100.41D.
Ueno, Ichiro, 4,209,793, Cl. 346-108.000.

Vinals, Joaquin: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,209,543, Cl. 426-538.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.

Vinals, Joaquin F.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,209,025, Cl. 131-17.00R.

Virnig, Michael J., to Henkel Corporation. Certain sulfonamidoquinolines, metal complexes thereof, and solutions containing such sulfonamidoquinolines and metal complexes. 4,209,419, Cl. 252-182.000.

Vishnipolsky, Joseph: *See*—
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, 4,209,131, Cl. 239-68.000.

Visscher, Saralee N., to Endowment and Research Foundation at Montana State University. Insect control compositions employing abscisic acid. 4,209,530, Cl. 424-317.000.

Vitale, Andrew P. Variable duration electric clock timer unit. 4,209,675, Cl. 200-33.00R.

Vlasenko, Viktor D.: *See*—
Tkachev, Valentin N.; Fishtein, Boris M.; Vlasenko, Viktor D.; and Kazintsev, Nikolai V., 4,209,057, Cl. 164-51.000.

Vock, Manfred H.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,209,649, Cl. 568-820.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,209,543, Cl. 426-538.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,209,542, Cl. 426-538.000.
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,209.025, Cl. 131-17.00R.

Vogt, B. Richard: *See*—
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Volkman, John C.: *See*—
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Volluet, Gerard, to Thomson-CSF. Magnetoelastic surface wave interaction device. 4,209,759, Cl. 333-153.000.

von Kaenel, Fred: *See*—
Thies, Hans; and von Kaenel, Fred, 4,209,469, Cl. 568-68.000.

von Konig, Anita: *See*—
Berthold, Werner; Botta, Artur; von Konig, Anita; and Rasp, Christian, 4,209,583, Cl. 430-418.000.

Vopel, Karl-Heinrich: *See*—
Janssen, Wilhelm; Vopel, Karl-Heinrich; and Meyer, Gunter, 4,209,322, Cl. 75-25.000.

Vorbruggen, Helmut, to Schering Aktiengesellschaft. Process for the preparation of nucleosides. 4,209,613, Cl. 536-23.000.

Voyer, Peter E.; Walsh, Thomas C.; and Grzyb, Joseph, to United Technologies Corporation. Process for welding flanges to a cylindrical engine casing having a plurality of spaced rails and ribs. 4,208,774, Cl. 29-156.40R.

Voyer, Peter E.: *See*—
Walsh, Thomas C.; Voyer, Peter E.; and Wallace, Francis J., 4,208,777, Cl. 29-418.000.

W-K-M Wellhead Systems, Inc.: *See*—
Peters, Clifford M., 4,209,040, Cl. 137-625.480.

W. R. Grace & Co.: *See*—
Previte, Robert W., 4,209,336, Cl. 106-90.000.
Schirmer, Henry G., 4,208,855, Cl. 53-417.000.

Wachtler, Maximilian: *See*—
Donath, Norbert W.; and Donath, Bernhard K., 4,209,782, Cl. 340-147.0MD.

Wacker-Chemie GmbH: *See*—
Graf, Werner; Frey, Volker; John, Peter; and Zeller, Norbert, 4,209,454, Cl. 556-457.000.
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Wada, Osamu; Sasaki, Yoshiyuki; Kumakawa, Shiro; Kimura, Akio; Shimizu, Toshimasa; Nagai, Hiroyuki; Takeda, Shunichi; and Shimazu, Takumi, to Teijin Limited. Linear crystalline terephthalate polyester yarn and textile goods made therefrom. 4,209,559, Cl. 428-91.000.

Wagner, Alfred: *See*—
Ames, Adolf; Wagner, Alfred; and Zillmann, Ulrich, 4,208,898, Cl. 72-258.000.

Wagner, Berthold: *See*—
Hofmann, Eberhard; Schwartz, Reinhard; and Wagner, Berthold, 4,208,998, Cl. 123-139.0AZ.

Wagner, Hans: *See*—
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, 4,209,461, Cl. 260-545.00R.

Wagner, Helmut; and Hess, Fritz, to Th. Goldschmidt AG. Preparation of hardenable binding agents based on cement and bituminous emulsions. 4,209,337, Cl. 106-96.000.

Wagner, Joseph F.; and Murray, Richard E., to Deere & Company. Two-piece seal for track chain joints. 4,209,204, Cl. 305-11.000.

Wagstaff, Robert A.: *See*—
McAllister, Ronald L.; Priepke, Edward H.; and Wagstaff, Robert A., 4,209,137, Cl. 241-221.000.

Wahren, Douglas: *See*—
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Wakino, Kikuo: *See*—
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Wakita, Hitoshi: *See*—
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Wakizaka, Hiroshi: *See*—
Schinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,378, Cl. 204-195.00S.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,209,377, Cl. 204-195.00S.

Waldrop, T. William; and Campbell, Willis R., to Sperry Rand Corporation. Automatic bale ejection drive. 4,208,862, Cl. 56-341.000.

Wall, Leslie W. Miter saw machine. 4,208,934, Cl. 83-468.000.

Wallace, Francis J.: *See*—
Walsh, Thomas C.; Voyer, Peter E.; and Wallace, Francis J., 4,208,777, Cl. 29-418.000.

Wallace, John F.; and Neuman, Robert W., to Foseco International Limited. Titanium-containing treatment agents for molten ferrous metal. 4,209,324, Cl. 75-58.000.

Wallace, Richard A. Portable hepatic-assist method and apparatus for same. 4,209,392, Cl. 210-23.00F.

Walseth, Timothy F.: *See*—
Johnson, Roger A.; and Walseth, Timothy F., 4,209,589, Cl. 435-90.000.

Walsh, Thomas C.; Voyer, Peter E.; and Wallace, Francis J., to United Technologies Corporation. Method for manufacturing a split engine casing from a cylinder. 4,208,777, Cl. 29-418.000.

Walsh, Thomas C.: *See*—
Voyer, Peter E.; Walsh, Thomas C.; and Grzyb, Joseph, 4,208,774, Cl. 29-156.40R.

Walter, Henry J.; and Kunz, Raymond W., to Clairol Incorporated. Hair straightening or waving mandrel for use with a vapor generating curling iron. 4,209,685, Cl. 219-225.000.

Walter, Lothar: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Schurger, Rainer; and Neder, Gunter, 4,209,208, Cl. 308-20.000.

Wangard, William; and Starkey, David T., to Norlin Industries, Inc. Data encoder for an electronic musical instrument. 4,208,939, Cl. 84-1.170.

Ward, Bruce D.; and Perlin, Alfred R., to Kendall Company, The. Artificial sphincter. 4,209,010, Cl. 128-1.00R.

Ward, Dennis J., to UOP Inc. Process for production of motor fuel and phthalate esters or acyclic alcohols. 4,209,652, Cl. 568-882.000.

Ward, Terence J.: *See*—
Archibald, John L.; and Ward, Terence J., 4,209,521, Cl. 424-267.000.

Wardlaw, Stephen C.; and Levine, Robert A. Optical viewing instrument including capillary tube and holder. 4,209,226, Cl. 350-85.000.

Warming, Nils, to J. D. Moller Optische Werke GmbH. Apparatus for generating and measurement of defined forces for medical appliances. 4,209,021, Cl. 128-652.000.

Warner Electric Brake & Clutch Company: *See*—
Wussow, James M., 4,209,213, Cl. 339-5.00R.

Wasco Products, Inc.: *See*—
Jentoft, Arthur P.; and Couture, Paul A., 4,208,840, Cl. 49-379.000.

Washida, Hiroshi; Sonoda, Tomiya; and Nakamura, Yuzo, to Tokyo Shibaura Electric Co, Ltd. Image intensifier whose input screen phosphor layer is divided into light guiding mosaic blocks by metal protrusions. 4,209,705, Cl. 250-486.000.

Watanabe, Eiki: *See*—
Anzai, Nobuo; and Watanabe, Eiki, 4,209,082, Cl. 187-29.00R.

Watanabe, Itaru: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.

Watanabe, Kazumasa: *See*—
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.

Watanabe, Tsutomu: *See*—
Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, 4,209,508, Cl. 424-117.000.

Watanabe, Yoshimoto: *See*—
Masuda, Takayoshi; Takase, Tsutomu; Watanabe, Yoshimoto; and Yamazaki, Fumio, 4,209,641, Cl. 568-617.000.

Waterman S.A.: *See*—
Droubay, Michel, 4,209,263, Cl. 401-198.000.

Watson, Barry R. Method and apparatus for running tubular goods into and out of a borehole. 4,209,066, Cl. 166-315.000.

Weber, Herbert, to Licentia Patent-Verwaltungs-G.m.b.H. Directional radio system for single sideband operation. 4,209,748, Cl. 455-47.000.

Weber, Leon, to SCM Corporation. Treatment of inorganic pigments. 4,209,430, Cl. 260-23.00H.

Webster, Thomas H.: *See*—
Cooper, Stephen M.; Webster, Thomas H.; and Jaunich, Helmut, 4,209,325, Cl. 75-58.000.

Wechter, Abraham J., to Norlin Industries, Inc. Adjustable bridge saddle. 4,208,941, Cl. 84-298.000.

Wehde, Heinz; Schumann, Fritz; and Wulfhorst, Burkhard, to Teldix GmbH. Yarn monitoring apparatus for an open-end spinning turbine. 4,209,778, Cl. 340-677.000.

Weill, Theodore C. Debarker toe assembly. 4,209,047, Cl. 144-208.00E.

Weinberger, Gerald J.; and Miller, Stanley F., to Utility Verification Corp. Telephone having reiterative dialing feature. 4,209,668, Cl. 179-90.00B.

Weinstein, Morris: *See*—
Green, Harold A.; Merianos, John J.; Petrocci, Alfonso N.; and Weinstein, Morris, 4,209,397, Cl. 210-54.000.

Weisenborn, Frank L.: *See*—
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,209,614, Cl. 536-25.000.

Welch, John W.: *See*—
Berger, David A.; and Welch, John W., 4,209,845, Cl. 364-900.000.

Welch, Kimo M., to United States of America, Energy. Thin film deposition by electric and magnetic crossed-field diode sputtering. 4,209,552, Cl. 427-78.000.

Well Men Industrial Company Limited: *See*—
Kwan, Wong M., 4,209,132, Cl. 239-381.000.

Welsh, David; and Milkovich, Ralph, to Arco Polymers, Inc. Thermoplastic elastomer blends having improved resistance to oil. 4,209,594, Cl. 525-71.000.

Wenzel, Werner, to NUSTEP Trenndusen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG. Apparatus for the separation of isotopes by separating-nozzle process. 4,209,309, Cl. 55-269.000.

Werber, Gerhardt P., to Estech Specialty Chemicals Corporation. Anaerobic monomers and adhesives. 4,209,604, Cl. 526-270.000.

West, Donald J., to J. I. Case Company. Tooth adaptor. 4,208,816, Cl. 37-141.00R.

Western Electric Company, Incorporated: *See*—
DiLeo, Daniel A.; Kurtz, Samuel E.; and Svitak, John J., 4,209,358, Cl. 156-293.000.

Westinghouse Electric Corp.: *See*—
Anderson, Larry W.; Rush, Donald L.; and McDonald, Michael P., 4,209,828, Cl. 364-426.000.
Harvey, Francis J., II; and Fey, Maurice G., 4,209,321, Cl. 75-10.00R.
Luck, Russell M.; and Gainer, Gordon C., 4,208,787, Cl. 29-623.000.
Samborski, Bruce A.; and Wiley, Roy O., 4,209,762, Cl. 335-18.000.
Sayre, Robert K., 4,209,231, Cl. 350-292.000.

Westlund, Jan, to Auto Tank AB. Arrangement for installing electric or electronic equipment in apparatuses for dispensing fuel. 4,209,712, Cl. 307-118.000.

Westphal, Bruce D.: *See*—
Berardi, James A.; Chelcun, Darrell; Dressel, Lawrence J.; and Westphal, Bruce D., 4,209,840, Cl. 364-200.000.

Weyl, Reinhard: *See*—
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.

Wheeler, Joe D.: *See*—
Jahns, Hans O.; and Wheeler, Joe D., 4,208,977, Cl. 114-40.000.

Wheeler, Thomas N., to Union Carbide Corporation. Biocidal 2-aryl-1,3-cyclohexane dione compounds and alkali metal and ammonium salts thereof. 4,209,532, Cl. 424-331.000.

Whitcraft, Loni S. Mother's gown with nursing apertures. 4,208,743, Cl. 2-104.000.

White, Eric L. C., to E M I Limited. Correlation arrangements. 4,209,785, Cl. 343-7.0PF.

White, Eugene B.; and Sharma, Mahindar N., to Filters International Inc. Methods for use in water purification particularly sewage treatment. 4,209,396, Cl. 210-47.000.

White Motor Corporation of Canada Limited: *See*—
Powell, Thomas E.; and Donaldson, Edward, 4,209,024, Cl. 130-27.00T.

White, Ralph L., Jr., to Morton-Norwich Products, Inc. 6,7-Dihydro-8H-pyrrolo[2,1-c][1,4]thiazine-1(8aH),4(3H)-dione. 4,209,617, Cl. 544-47.000.

Whitehouse, John A., to AEW Engineering Co. Ltd. Machines for cutting meat and the like. 4,208,936, Cl. 83-713.000.

Whiteside, George D.: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,209,243, Cl. 354-30.000.

Whittam, Thomas V., to Imperial Chemical Industries Limited. Silica-containing material FU-1. 4,209,498, Cl. 423-328.000.

Whyte, David D., to Procter & Gamble Company, The. Perfumed particles and detergent composition containing same. 4,209,417, Cl. 252-174.110.

Wickes, Robert R. Kit for closet supports. 4,209,099, Cl. 211-182.000.

Wicks, Anthony E. Parenteral administration apparatus. 4,209,015, Cl. 128-214.400.

Widmer, Hans: *See*—
Koppl, Georg; Pedrini, Giovanni; and Widmer, Hans, 4,209,679, Cl. 200-148.00A.

Wiemeyer, Benno: *See*—
Dreyer, Heinz; and Wiemeyer, Benno, 4,208,974, Cl. 111-85.000.

Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne: *See*—
Horvath, Johann, 4,209,161, Cl. 249-180.000.

Wiggans, John M., to General Motors Corporation. Fuel metering valve with porous element. 4,209,038, Cl. 137-547.000.

Wiggins, Richard H., Jr.; and Brantingham, George L., to Texas Instruments Incorporated. Speech synthesis integrated circuit device. 4,209,836, Cl. 364-718.000.

Wiggins, Richard H., Jr.: *See*—
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,209,844, Cl. 364-724.000.

Wiking, Hakan; and Johnsson, Bo, to Wiking, Lars. Pack, comprising a stack of abutting rectangular plates, intended for a regenerative heat exchanger, and a method of manufacturing such a pack. 4,209,060, Cl. 165-8.000.

Wiking, Lars: *See*—
Wiking, Hakan; and Johnsson, Bo, 4,209,060, Cl. 165-8.000.

Wildey Firearms Company, Inc.: *See*—
Hillberg, Robert L., 4,208,947, Cl. 89-148.000.

Wiley, Jack C.: *See*—
Orlandea, Nicolae; and Wiley, Jack C., 4,209,072, Cl. 180-245.000.

Wiley, Paul F.: *See*—
Marshall, Vincent P.; Elrod, David W.; and Wiley, Paul F., 4,209,611, Cl. 536-17.00A.

Wiley, Roy O.: *See*—
Samborski, Bruce A.; and Wiley, Roy O., 4,209,762, Cl. 335-18.000.

Williams, Joseph B., to General Electric Company. Flame retardant polycarbonate composition. 4,209,427, Cl. 260-17.500.

Williams, Wilmore, to Beatrice Foods Co. Koji process for producing soy sauce. 4,209,535, Cl. 426-46.000.

Willis, Wilburn C.: *See*—
Dunn, Lloyd G.; and Willis, Wilburn C., 4,209,102, Cl. 215-329.000.

Wilson, Alan D.; and Crisp, Stephen, to National Research Development Corporation. Dental cement containing poly(carboxylic acid), chelating agent and glass cement powder. 4,209,434, Cl. 260-29.60H.

Wilson, Joe C.: *See*—
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,415, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,209,416, Cl. 252-76.000.

Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the flavor of tobacco using 1-(3-methylthio)butyryl)-2,6,6-trimethyl-cyclohexene and the 1,3-cyclohexadiene analog thereof. 4,209,025, Cl. 131-17.00R.

Wilson, Woodrow S.; and Gryncewicz, Benjamin, to Polytop Corporation. Dispensing closure structures. 4,209,114, Cl. 222-536.000.

Winans, Esther D.; Ryer, Jack; Gutierrez, Antonio; and Shaub, Harold, to Exxon Research & Engineering Co. Methylol polyesters of C_{12}–C_{22} hydrocarbon substituted succinic anhydride or acid, their preparation and use as additives for lubricants and fuels. 4,209,411, Cl. 252-56.00D.

Winans, Eugene P. Display assembly with card ejector. 4,209,108, Cl. 221-6.000.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Esvelt, Robert P., 4,209,634, Cl. 560-116.000.

Wisian-Neilson, Patty: *See*—
Spielvogel, Bernard F.; Mc Phail, Andrew T.; Hall, Iris H.; Wisian-Neilson, Patty; and Hargrave, Karl D., 4,209,510, Cl. 424-148.000.

Wissner, Allan, to American Cyanamid Company. 13-Thia-prostaglandins. 4,209,639, Cl. 562-426.000.

Witco Chemical Corporation: *See*—
Clark, John R.; and Fisch, Michael H., 4,209,431, Cl. 260-23.00H.

Wohl, Ronald A., to Cooper Laboratories, Inc. Process for preparing substituted bis(amidinoureas). 4,209,624, Cl. 544-400.000.

Wolf, Dieter; Diem, Hans; Grabowsky, Otto; and Matthias, Guenther, to BASF Aktiengesellschaft. Manufacture of formaldehyde. 4,209,466, Cl. 568-487.000.

Wolf, Tobin. Realistic driving toy. 4,208,833, Cl. 46-240.000.

Wolf, William D.: *See*—
Simon, Joseph F.; and Wolf, William D., 4,209,344, Cl. 134-23.000.

Wong, Yee S.: *See*—
Steinman, Martin; and Wong, Yee S., 4,209,464, Cl. 260-578.000.

Wood, Kenneth O.; and Alford, Robert S., to Gerber Scientific Instrument Company, The. Plotting apparatus having an adjustable plotting head. 4,209,239, Cl. 354-4.000.

Wood, Michael J., to J. P. Burroughs & Son, Inc. Method for expanding particulate material. 4,209,537, Cl. 426-233.000.

Wood, Raymond F., to Servis Domestic Appliances Limited. Control circuits in or for washing, drying and the like machines or other apparatus. 4,208,890, Cl. 68-12.00R.

Woodhull, Ivan D., Jr., to Karmazin Products Corporation. Heat exchanger construction. 4,209,062, Cl. 165-38.000.

Woodruff, Richard E., to TransFRESH Corporation. Method for inhibiting fungi in citrus fruit. 4,209,538, Cl. 426-314.000.

Woolf, Cyril, deceased: *See*—
Mares, Frank; Oxenrider, Bryce C.; Woolf, Cyril, deceased; and Woolf, Helga, executrix, 4,209,610, Cl. 260-40.00R.

Woolf, Helga, executrix: *See*—
Mares, Frank; Oxenrider, Bryce C.; Woolf, Cyril, deceased; and Woolf, Helga, executrix, 4,209,610, Cl. 260-40.00R.

Wooten, John R.; Carpenter, Harry W.; and Cain, Edwin F. C., to Rockwell International Corporation. Method of sintering ceramics. 4,209,478, Cl. 264-65.000.

Workman, David B., to Sperry Corporation. Dynamic cleaning method and apparatus for removal of remnant material. 4,209,342, Cl. 134-10.000.

Wozniak, Glenn A.: *See*—
Pate, Harold T.; and Wozniak, Glenn A., 4,209,661, Cl. 174-65.00R.

Wright, Robert L.: *See*—
Maender, Otto W.; and Wright, Robert L., 4,209,463, Cl. 260-576.000.

Wulfhorst, Burkhard: *See*—
Wehde, Heinz; Schumann, Fritz; and Wulfhorst, Burkhard, 4,209,778, Cl. 340-677.000.

Wussow, James M., to Warner Electric Brake & Clutch Company. Brush holder and slip ring assembly. 4,209,213, Cl. 339-5.00R.

Wygant, Gary E.: *See*—
Frahme, Carl E.; and Wygant, Gary E., 4,209,295, Cl. 432-247.000.

Wynn Oil Company: *See*—
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,209,063, Cl. 165-95.000.

Wyss, Jurg: *See*—
Snedkerud, Ole; and Wyss, Jurg, 4,209,758, Cl. 333-17.00M.

Xerox Corporation: *See*—
Hagenbach, Robert J.; and Johnston, Robert G., 4,209,550, Cl. 427-27.000.
Savage, James G., 4,209,262, Cl. 400-144.200.

Yabune, Hideo; and Nambu, Masami, to Daicel Ltd. Cellulose ester resin composition. 4,209,340, Cl. 106-176.000.

Yada, Shinko: *See*—
Arita, Yoichi; Yada, Shinko; and Onishi, Ko, 4,209,376, Cl. 204-195.00C.

Yamabe, Masaaki: *See*—
Munekata, Seiji; Ukihashi, Hiroshi; Yamabe, Masaaki; and Kaneko, Isamu, 4,209,635, Cl. 560-183.000.

Yamadaki, Motozumi: *See*—
Mitsui, Isamu; Iwanami, Takefumi; Joko, Kazuo; Watanabe, Tsutomu; Yamadaki, Motozumi; and Mori, Yukinori, 4,209,508, Cl. 424-117.000.

Yamafuji, Tsutomu: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.

Yamaji, Teizo: *See*—
Ichikawa, Yataro; Yamaji, Teizo; and Yamamoto, Mamoru, 4,209,644, Cl. 568-596.000.

Yamakoshi, Yasumichi: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; Hane, Toshioki; Fukumoto, Mitsunobu; Watanabe, Itaru; and Tsushima, Sakae, 4,209,367, Cl. 204-98.000.

Yamamitsu, Chojuro; Kitamura, Sadafumi; and Miyamoto, Akira, to Matsushita Electric Industrial Co., Ltd. Magnetic color video recording and reproducing system with color killer circuit. 4,209,800, Cl. 358-8.000.

Yamamori, Eiji: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; Takahashi, Norimichi; and Umetsu, Junji, 4,209,247, Cl. 354-219.000.

Yamamoto, Haruhisa; and Ooura, Kiyomori, to Nippon Zeon Co., Ltd. Catalysts for the oxidation of unsaturated aldehydes. 4,209,640, Cl. 562-532.000.

Yamamoto, Jiro. Golf ball putter club and putting method. 4,209,172, Cl. 273-183.00C.

Yamamoto, Mamoru: *See*—
Ichikawa, Yataro; Yamaji, Teizo; and Yamamoto, Mamoru, 4,209,644, Cl. 568-596.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.

Yamataka, Akihiro: *See*—
Tazaki, Shigemitsu; Yamataka, Akihiro; Souma, Tsunenori; and Kusumoto, Tadao, 4,209,850, Cl. 365-189.000.

Yamazaki, Fumio: *See*—
Masuda, Takayoshi; Takase, Tsutomu; Watanabe, Yoshimoto; and Yamazaki, Fumio, 4,209,641, Cl. 568-617.000.

Yanagida, Hiroaki; Nagai, Masayuki; and Shimizu, Tadao, to Mitsubishi Mining & Cement Co., Ltd. Process for preparing a film of densely packed structure. 4,209,477, Cl. 264-62.000.

Yanai, Elisha: *See*—
Barash, Sorin; Brandman, Yigal; Cohen, Yitzhak; Shporn, Shaul; Vishnipolsky, Joseph; and Yanai, Elisha, 4,209,131, Cl. 239-68.000.

Yara Engineering Corporation: *See*—
Lyons, Sanford C., 4,209,128, Cl. 233-7.000.

Yasui, Seimei: *See*—
Sato, Hiroshi; Tojima, Hideto; and Yasui, Seimei, 4,209,653, Cl. 585-313.000.

Yasuzawa, Kohei: *See*—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.

Yokoi, Shinji: *See*—
Tomita, Kazuo; Murakami, Tadashi; Tsuji, Hideakira; Matsumoto, Keigo; Fujita, Katsuhiro; and Yokoi, Shinji, 4,209,512, Cl. 424-200.000.

Yokoyama, Takushi: *See*—
Kojima, Hidetaka; Oda, Shingo; Yokoyama, Takushi; and Murakami, Yasukazu, 4,209,467, Cl. 260-340.700.

York, Lyle E., to Caterpillar Tractor Co. Adjustable control console. 4,209,074, Cl. 180-78.000.

Yoshida, Hirokazu: *See*—
Kiuchi, Mitsuyuki; Yoshida, Hirokazu; Hamaoka, Shigeo; and Wakita, Hitoshi, 4,209,683, Cl. 219-10.770.

Yoshida, Kanji, to Tomy Kogyo Co., Inc. Mechanical hand amusement device. 4,208,830, Cl. 46-1.00R.

Yoshida, Kenji: *See*—
Sato, Yuzuru; Kobayashi, Ryuichiro; Kunieda, Naoshi; Watanabe, Kazumasa; Mizukura, Noboru; Yoshida, Kenji; and Oya, Tadanori, 4,209,328, Cl. 430-225.000.

Yoshida, Noboru: *See*—
Ogino, Shigeo; Yoshida, Noboru; and Kiyohara, Takao, 4,209,507, Cl. 424-116.000.

Yoshida, Shoji; and Harakon, Katsuyuki, to Bridgestone Tire Company Limited. Pneumatic tires for high speed vehicles. 4,209,050, Cl. 152-354.00R.

Yoshida, Takeshi: *See*—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.

Yoshida, Takuji, to NGK Insulators, Ltd.; and Noritake Iron Works Co., Ltd. Filter press. 4,209,404, Cl. 210-225.000.

Yoshida, Toshiro; and Kumai, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Carburetor outer vent control device. 4,208,997, Cl. 123-136.000.

Yoshida, Yoshisaburo, to Sharp Kabushiki Kaisha. Solar battery powered electronic calculator. 4,209,735, Cl. 320-2.000.

Yoshimura, Kiyoharu: *See*—
Noguchi, Kosaku; Yoshimura, Kiyoharu; Tanaka, Honami; and Hayashi, Masao, 4,209,382, Cl. 208-22.000.

Yoshimura, Yukio: *See*—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,209,429, Cl. 260-19.00R.

Yoshioka, Hisaya: *See*—
Fujiwara, Toshio; Sakimoto, Junji; and Yoshioka, Hisaya, 4,209,268, Cl. 405-147.000.

Yu, Chia-Nien, to Morton-Norwich Products, Inc. 5-(4-Chlorophenyl)-2-furanmethyl methyl ketone. 4,209,448, Cl. 260-347.800.

Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa. Escape device for use in multistoried buildings. 4,209,077, Cl. 182-42.000.

Yunker, Jerrold R.: *See*—
Yunker, Julius R.; and Yunker, Jerrold R., 4,208,815, Cl. 37-141.00R.

Yunker, Jerrold Ralph: *See*—
Yunker, Julius R.; and Yunker, Jerrold R., 4,208,815, Cl. 37-141.00R.

Yunker, Julius R.; and Yunker, Jerrold R., to Yunker, Julius Ralph; Yunker, Jerrold Ralph; and Michael, Charles E. Straight edge blade for installation on an earth moving bucket. 4,208,815, Cl. 37-141.00R.

Yunker, Julius Ralph: *See*—
Yunker, Julius R.; and Yunker, Jerrold R., 4,208,815, Cl. 37-141.00R.

Yutaka, Jin; Kasuga, Osamu; and Kyuzaki, Tsutomu, to Nippon Electric Co., Ltd. Circulator comprising a spring member between a ferrimagnetic piece and an adjacent conductor. 4,209,756, Cl. 333-1.100.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Oka, Yoshihiko; Ishida, Hitoshi; Morioka, Moto; Numasaki, Yoso; Yamafuji, Tsutomu; Osono, Takashi; and Umezawa, Hamao, 4,209,511, Cl. 424-180.000.
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,209,588, Cl. 435-78.000.

Zaklady Chemiczne "Aspeta" Spoldzielnia Pracy.: *See*—
Zmojdzin, Andrzej; Urbanski, Kazimierz; Utecht, Edmund; and Stelmachowski, Wladyslaw, 4,209,631, Cl. 548-338.000.

Zavagli, Steven B.; and Kasik, Robert L., to Beatrice Foods Co. Bland neutralized casein. 4,209,544, Cl. 426-580.000.

Zawacki, Joseph H.; and Dutton, John P., to Lear Siegler, Inc. Axle spindle forming apparatus. 4,208,900, Cl. 72-354.000.

Zdeb, John J.: *See*—
Horton, Richard H.; and Zdeb, John J., 4,209,236, Cl. 353-3.000.

Zeller, Norbert: *See*—
Graf, Werner; Frey, Volker; John, Peter; and Zeller, Norbert, 4,209,454, Cl. 556-457.000.

Zerbst, Helmut: *See*—
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and LeFranc, Guy, 4,209,701, Cl. 250-396.0ML.

Zillmann, Ulrich: *See*—
Ames, Adolf; Wagner, Alfred; and Zillmann, Ulrich, 4,208,898, Cl. 72-258.000.

Zimmerman, Abraham A.; and Ryer, Jack, to Exxon Research & Engineering Co. Multicomponent demulsifier, method of using the same and hydrocarbon containing the same. 4,209,422, Cl. 252-344.000.

Zinser Textilmaschinen GmbH: *See*—
Koella, Ernest, III, 4,208,865, Cl. 57-303.000.

Zmojdzin, Andrzej; Urbanski, Kazimierz; Utecht, Edmund; and Stelmachowski, Wladyslaw, to Zaklady Chemiczne "Aspeta" Spoldzielnia Pracy. Process for the safe nitration of 2-methylimidazole. 4,209,631, Cl. 548-338.000.

Zotterman, Carl: *See*—
Stenberg, Erik G.; Wahren, Douglas; and Zotterman, Carl, 4,209,360, Cl. 162-203.000.

Zuker, Paul: *See*—
Tumey, Lawrence F.; and Zuker, Paul, 4,209,288, Cl. 425-113.000.

Zylstra, Henry J.; and Borrett, Ronald D., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,209,818, Cl. 361-96.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JUNE, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Carcia, Peter F., to Du Pont de Nemours, E. I., and Company. Resistors and compositions therefor. Re. 30,313, Cl. 252-520.000.

Chaplin, Gervase M.; and Childers, Thomas W., to Exxon Production Research Company. Apparatus and method for externally testing conduit connections. Re. 30,311, Cl. 73-46.000.

Childers, Thomas W.: *See*—
Chaplin, Gervase M.; and Childers, Thomas W., Re. 30,311, Cl. 73-46.000.

Du Pont de Nemours, E. I., and Company: *See*—
Carcia, Peter F., Re. 30,313, Cl. 252-520.000.

Eli Lilly and Company: *See*—
Holmes, Richard E., Re. 30,314, Cl. 544-344.000.

Exxon Production Research Company: *See*—
Chaplin, Gervase M.; and Childers, Thomas W., Re. 30,311, Cl. 73-46.000.

Holmes, Richard E., to Eli Lilly and Company. Substituted pyrroloquinoxalinones and diones. Re. 30,314, Cl. 544-344.000.

Kessel, Elton. Intrauterine contraceptive device. Re. 30,312, Cl. 128-130.000.

LaFiandra, Carlo F., to Perkin-Elmer Corporation, The. Precision base mercury vapor lamp. Re. 30,315, Cl. 313-51.000.

Perkin-Elmer Corporation, The: *See*—
LaFiandra, Carlo F., Re. 30,315, Cl. 313-51.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Jessel, Walter H., Jr.; and Duffett, William E., 4,554, Cl. 74.000.
Jessel, Walter H., Jr.; and Duffett, William E., 4,555, Cl. 78.000.
Jessel, Walter H., Jr.; and Duffett, William E., 4,556, Cl. 78.000.

Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA": *See*—
Holtkamp, Reinhold, 4,557, Cl. 69.000.

Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA". African violet plant. 4,557, 6-24-80, Cl. 69.000.

Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant cultivar name: Radiant. 4,554, 6-24-80, Cl. 74.000.

Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant cultivar name: Vanguard. 4,555, 6-24-80, Cl. 78.000.

Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,556, 6-24-80, Cl. 78.000.

Weeks, O. L. Rose plant. 4,552, 6-24-80, Cl. 11.000.

Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr.; and Duffett, William E., 4,554, Cl. 74.000.
Jessel, Walter H., Jr.; and Duffett, William E., 4,555, Cl. 78.000.
Jessel, Walter H., Jr.; and Duffett, William E., 4,556, Cl. 78.000.

Zaiger, Chris F. Apricot tree. 4,553, 6-24-80, Cl. 39.000.

LIST OF DESIGN PATENTEES

Aamoth, Gerald R.; and McKinsey, Kevin P., to Atari, Inc. Video game control unit. 255,565, 6-24-80, Cl. D13-12.000.

American Cyanamid Company: *See*—
Grodin, Adam J., 255,545, Cl. D9-168.000.
Grodin, Adam J., 255,547, Cl. D9-224.000.
Grodin, Adam J., 255,548, Cl. D9-254.000.

Antos, John M.: *See*—
Sargent, Frank T.; and Antos, John M., 255,597, Cl. D23-48.000.

Appleman, Donald T.; and Campbell, Paul R., to Procter & Gamble Company, The. Non-woven sheet material or the like. 255,614, 6-24-80, Cl. D92-1.00C.

Appleman, Donald T.; and Campbell, Paul R., to Procter & Gamble Company, The. Non-woven sheet material or the like. 255,615, 6-24-80, Cl. D92-1.00C.

Arnold, Betsy J. Doll. 255,591, 6-24-80, Cl. D21-168.000.

Atari, Inc.: *See*—
Aamoth, Gerald R.; and McKinsey, Kevin P., 255,565, Cl. D13-12.000.

Ayson, Sarah. Pendant. 255,557, 6-24-80, Cl. D11-79.000.

Baylis, Frank E. Lug nut lock for an automobile wheel. 255,540, 6-24-80, Cl. D8-331.000.

Beitler, Myron, to Litton Business Systems, Inc. Ribbon cassette. 255,567, 6-24-80, Cl. D14-11.000.

Berce, Jacques; and Mournaud, Patrick. Building. 255,604, 6-24-80, Cl. D25-18.000.

Berling, Everett: *See*—
Berling, Janet S.; Parr, Alice J.; Berling, Everett; and Parr, Edward, 255,590, Cl. D21-145.000.

Berling, Janet S.; Parr, Alice J.; Berling, Everett; and Parr, Edward. Lighted toy sword. 255,590, 6-24-80, Cl. D21-145.000.

Bio-Plas: *See*—
De Vaughn, Donald H., 255,601, Cl. D24-55.000.

Bogner, Max; and Grun, Larry. Finger ring. 255,556, 6-24-80, Cl. D11-26.000.

Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., to Raytheon Company. Microwave corn popper. 255,536, 6-24-80, Cl. D7-95.000.

Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., to Raytheon Company. Corn popper. 255,537, 6-24-80, Cl. D7-95.000.

Bowen, Robert F.: *See*—
Freedman, George; Teich, Wesley W.; and Bowen, Robert F., 255,535, Cl. D7-85.000.
Lange, Alfred C.; Teich, Wesley W.; and Bowen, Robert F., 255,533, Cl. D7-85.000.
Martel, Thomas J.; Bowen, Robert F.; and D'Ovidio, Thomas H., 255,534, Cl. D7-85.000.

Braun Aktiengesellschaft: *See*—
Rams, Dieter, 255,568, Cl. D14-20.000.

Brentini, Attilio. Set of price indicating numerals. 255,584, 6-24-80, Cl. D18-29.000.

Briggs, Eugene C.; Shaftner, Robert F.; and Giambrone, Harry J., to Koehring Company. Window heater. 255,599, 6-24-80, Cl. D23-93.000.

Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M. Hand operated control unit. 255,563, 6-24-80, Cl. D13-32.000.

Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M. Hand operated control unit. 255,564, 6-24-80, Cl. D13-32.000.

Cabiddu, John. Hair wave setting rod. 255,608, 6-24-80, Cl. D28-35.000.

Camerino, Giuliana. Bar of soap. 255,613, 6-24-80, Cl. D28-8.200.

Campbell, Paul R.: *See*—
Appleman, Donald T.; and Campbell, Paul R., 255,614, Cl. D92-1.00C.
Appleman, Donald T.; and Campbell, Paul R., 255,615, Cl. D92-1.00C.

Canron Corp.: *See*—
Pearson, Eugene W.; and Short, Wilbur G., 255,575, Cl. D15-123.000.

Cardinal American Corporation: *See—*
Gale, Allen W., 255,517, Cl. D6-144.000.

Carpco, Inc.: *See—*
Knoll, Frank S.; and Nease, Allen D., Jr., 255,579, Cl. D15-147.000.
Knoll, Frank S.; and Nease, Allen D., Jr., 255,580, Cl. D15-147.000.

Carver, Juanita. Latch hooking yarn dispenser. 255,574, 6-24-80, Cl. D15-78.000.

Chapman, Brian. Combined bath and shower unit. 255,598, 6-24-80, Cl. D23-49.000.

Christen Incorporated: *See—*
Christen, Louis J., Jr., 255,512, Cl. D4-39.000.

Christen, Louis J., Jr., to Christen Incorporated. Brush. 255,512, 6-24-80, Cl. D4-39.000.

Chromcraft Corporation: *See—*
Pittman, Ernest A., 255,516, Cl. D6-144.000.
Wilson, Robert L., 255,521, Cl. D6-196.000.

Clarke-Fodor, Sharon. Self-grooming aid for cats. 255,610, 6-24-80, Cl. D30-40.000.

Cognata, Larry M.: *See—*
Cox, William A.; Scott, Paul L.; and Cognata, Larry M., 255,573, Cl. D15-14.000.

Collins, Samuel T., to Trend Line Furniture Corporation. Sofa. 255,513, 6-24-80, Cl. D6-61.000.

Cox, William A.; Scott, Paul L.; and Cognata, Larry M., to Murray Ohio Manufacturing Co., The. Rear discharge rotary lawn mower. 255,573, 6-24-80, Cl. D15-14.000.

Dacor Corporation: *See—*
Rasocha, Stanley, 255,609, Cl. D29-6.000.

Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Measuring cup or the like. 255,530, 6-24-80, Cl. D7-50.000.

Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Measuring pitcher or the like. 255,531, 6-24-80, Cl. D7-50.000.

Dahlqvist, Olof, to OY. Fiskars AB. Guide post assembly for tools. 255,576, 6-24-80, Cl. D15-138.000.

Dahlqvist, Olof, to OY. Fiskars AB. Guide post assembly for tools. 255,577, 6-24-80, Cl. D15-138.000.

Dalton, David R.: *See—*
Wong, Chung-Chee; and Dalton, David R., 255,612, Cl. D26-48.000.

Dane, George E. Pen holder. 255,586, 6-24-80, Cl. D19-82.000.

Dane, George E. Pen holder. 255,587, 6-24-80, Cl. D19-82.000.

Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 255,530, Cl. D7-50.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 255,531, Cl. D7-50.000.

De Coster, Pieter K. J.: *See—*
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 255,530, Cl. D7-50.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 255,531, Cl. D7-50.000.

Dempster Corporation: *See—*
Dempster, Susan E., 255,526, Cl. D6-271.000.

Dempster, Susan E., to Dempster Corporation. Fringed textile placemat or the like. 255,526, 6-24-80, Cl. D6-271.000.

De Vaughn, Donald H., to Bio-Plas. Pipette tip. 255,601, 6-24-80, Cl. D24-55.000.

D'Ovidio, Thomas H.: *See—*
Martel, Thomas J.; Bowen, Robert F.; and D'Ovidio, Thomas H., 255,534, Cl. D7-85.000.

Dziekonski, Robert, to Salton, Inc. Coffee maker. 255,529, 6-24-80, Cl. D7-41.000.

Ekuan, Kenji, to Yamaha Hatsudoki Kabushiki Kaisha. Golf car. 255,558, 6-24-80, Cl. D12-16.000.

Electrolux Corporation: *See—*
Lampe, Robert C.; and Schick, George, 255,595, Cl. D23-23.000.

Ethyl Development Corporation: *See—*
Shortino, Vincent M., 255,542, Cl. D9-143.000.
Shortino, Vincent M., 255,543, Cl. D9-143.000.

Ethyl Products Company: *See—*
Kirk, Donald C., Jr., 255,549, Cl. D9-258.000.
Kirk, Donald C., Jr., 255,550, Cl. D9-258.000.

Eubanks, Ann S.; and Steinkraus, Celeste M., to Flossie, Inc. Combined holder and organizer for thread or the like. 255,506, 6-24-80, Cl. D3-23.000.

Finnieston, Alan. Wrist and thumb zone immobilizer. 255,602, 6-24-80, Cl. D24-64.000.

Finnieston, Alan. Wrist zone immobilizer. 255,603, 6-24-80, Cl. D24-64.000.

Flossie, Inc.: *See—*
Eubanks, Ann S.; and Steinkraus, Celeste M., 255,506, Cl. D3-23.000.

Fostoria Glass Company: *See—*
Saffell, Jon R., 255,532, Cl. D7-54.000.

Freedman, George; Teich, Wesley W.; and Bowen, Robert F., to Raytheon Company. Microwave corn popping appliance. 255,535, 6-24-80, Cl. D7-85.000.

Friedman, Ira, to Rowe Furniture Corporation. Furniture seat. 255,515, 6-24-80, Cl. D6-63.000.

Friedman, Ira, to Rowe Furniture Corporation. Table or the like. 255,519, 6-24-80, Cl. D6-175.000.

G.R.S. Tool and Die Inc.: *See—*
LaPointe, Guy, 255,560, Cl. D12-154.000.

Gale, Allen W., to Cardinal American Corporation. Bar. 255,517, 6-24-80, Cl. D6-144.000.

Garcia, Alexandria. Eye cosmetic shield. 255,606, 6-24-80, Cl. D28-9.000.

General Electric Company: *See—*
Houlihan, John T., 255,572, Cl. D14-73.000.
Klucznik, Paul J., 255,571, Cl. D14-71.000.

Giambrone, Harry J.: *See—*
Briggs, Eugene C.; Shaftner, Robert F.; and Giambrone, Harry J., 255,599, Cl. D23-93.000.

Gingher, Clair H., Jr., to Gingher, Inc. Shears sheath. 255,507, 6-24-80, Cl. D3-30.000.

Gingher, Inc.: *See—*
Gingher, Clair H., Jr., 255,507, Cl. D3-30.000.

Goto, Tetuya, to Ricoh Company, Ltd. Electrostatic copier. 255,583, 6-24-80, Cl. D16-30.000.

Graham, Harry J. Multi-purpose tool. 255,539, 6-24-80, Cl. D8-22.000.

Grodin, Adam J., to American Cyanamid Company. Bottle or similar article. 255,545, 6-24-80, Cl. D9-168.000.

Grodin, Adam J., to American Cyanamid Company. Display container. 255,547, 6-24-80, Cl. D9-224.000.

Grodin, Adam J., to American Cyanamid Company. Bottle stopper. 255,548, 6-24-80, Cl. D9-254.000.

Grun, Larry: *See—*
Bogner, Max; and Grun, Larry, 255,556, Cl. D11-26.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Janda, George M., 255,570, Cl. D14-60.000.

Herbst, Walter B.: *See—*
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,536, Cl. D7-95.000.
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,537, Cl. D7-95.000.

Herczeg, Frank. Grinding and machine dog. 255,578, 6-24-80, Cl. D15-140.000.

Herman, Gary: *See—*
Nathan, Michael; and Herman, Gary, 255,509, Cl. D3-59.000.

Hill, Percy H.; and Kreifeldt, John G., to Johnson & Johnson. Toothbrush. 255,511, 6-24-80, Cl. D4-25.000.

Hirota, Kimio, to Kabushiki Kaisha Seikosha. Clock. 255,551, 6-24-80, Cl. D10-15.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Morioka, Minoru; and Ogishim. Tetuo, 255,559, Cl. D12-110.000.

Houlihan, John T., to General Electric Company. Clock radio or similar article. 255,572, 6-24-80, Cl. D14-73.000.

Hughes, Robert L. Carrying case for a tennis racquet and balls. 255,508, 6-24-80, Cl. D3-36.000.

Humphries, Romilly H., to S.A.Y. Industries, Inc. Oil container. 255,544, 6-24-80, Cl. D9-159.000.

Hunter, Randall L. Fishing lure. 255,593, 6-24-80, Cl. D22-27.000.

Hurtado, Paul A. Combined pipe rack and ashtray. 255,605, 6-24-80, Cl. D27-25.000.

Imada, Michio, to Olympus Optical Co., Ltd. Combined cassette tape recorder and radio. 255,566, 6-24-80, Cl. D14-5.000.

Invicta Plastics Limited: *See—*
McAusland, Barrie H., 255,588, Cl. D21-20.000.

Izumi, Toshio, to Sawafuji Denki Kabushiki Kaisha. Alarm for overdischarge of storage battery. 255,553, 6-24-80, Cl. D10-106.000.

Janda, George M., to GTE Automatic Electric Laboratories Incorporated. Housing for a telephone instrument base. 255,570, 6-24-80, Cl. D14-60.000.

Johnson & Johnson: *See—*
Hill, Percy H.; and Kreifeldt, John G., 255,511, Cl. D4-25.000.

Johnson, Ray W. Simulative toy top. 255,589, 6-24-80, Cl. D21-98.000.

Johnson, Robert L. Vacuum breaking tee. 255,596, 6-24-80, Cl. D23-40.000.

Kabushiki Kaisha Seikosha: *See—*
Hirota, Kimio, 255,551, Cl. D10-15.000.

Karolak, Edward F. Two hand mitten. 255,505, 6-24-80, Cl. D2-364.000.

King-Seeley Thermos Co.: *See—*
Seager, Richard H., 255,527, Cl. D7-21.000.
Seager, Richard H., 255,528, Cl. D7-40.000.

Kirk, Donald C., Jr., to Ethyl Products Company. Spray pump dispensing cap. 255,549, 6-24-80, Cl. D9-258.000.

Kirk, Donald C., Jr., to Ethyl Products Company. Spray pump dispensing cap. 255,550, 6-24-80, Cl. D9-258.000.

Klucznik, Paul J., to General Electric Company. Citizens' band radio or similar article. 255,571, 6-24-80, Cl. D14-71.000.

Knoll, Frank S.; and Nease, Allen D., Jr., to Carpco, Inc. Magnetic separator for particulate materials. 255,579, 6-24-80, Cl. D15-147.000.

Knoll, Frank S.; and Nease, Allen D., Jr., to Carpco, Inc. Magnetic separator for particulate materials. 255,580, 6-24-80, Cl. D15-147.000.

Koehring Company: *See—*
Briggs, Eugene C.; Shaftner, Robert F.; and Giambrone, Harry J., 255,599, Cl. D23-93.000.

Koenig, Burton G. Fishing apparatus for the quick disconnection of the hook from the fishing line. 255,594, 6-24-80, Cl. D22-31.000.

Kreifeldt, John G.: *See—*
Hill, Percy H.; and Kreifeldt, John G., 255,511, Cl. D4-25.000.

Krysakowski, John F. Golf putter head and shaft. 255,592, 6-24-80, Cl. D21-218.000.

Lackenby, John. Camera bracket. 255,582, 6-24-80, Cl. D16-47.000.

Lampe, Robert C.; and Schick, George, to Electrolux Corporation. Faucet. 255,595, 6-24-80, Cl. D23-23.000.

Lange, Alfred C.; Teich, Wesley W.; and Bowen, Robert F., to Raytheon Company. Popcorn maker. 255,533, 6-24-80, Cl. D7-85.000.

Lange, Alfred C.: *See—*
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,536, Cl. D7-95.000.
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,537, Cl. D7-95.000.
LaPointe, Guy, to G.R.S. Tool and Die Inc. Traction plate for vehicles. 255,560, 6-24-80, Cl. D12-154.000.
Litton Business Systems, Inc.: *See—*
Beitler, Myron, 255,567, Cl. D14-11.000.
Llanos, Leon A., to Uptrend Products Ltd. Telephone index. 255,585, 6-24-80, Cl. D19-76.000.
Logsdon, Gaylord F. Modular cabinet. 255,518, 6-24-80, Cl. D6-158.000.
Love, Bloxum H. Combined saddle and tack rack. 255,611, 6-24-80, Cl. D30-45.000.
Lung, Gilbert K., to Sonway Manufacturers Ltd. Combined headphone and radio. 255,569, 6-24-80, Cl. D14-36.000.
Lyons, Charles F. Wine rack. 255,520, 6-24-80, Cl. D6-188.000.
M. Nathan, Inc.: *See—*
Nathan, Michael; and Herman, Gary, 255,509, Cl. D3-59.000.
Marchant, Nicholas G., to Waterford Ironfounders Limited. Wood-burning stove. 255,600, 6-24-80, Cl. D23-97.000.
Marsupium, Inc.: *See—*
Roberts, Margaret, 255,525, Cl. D6-268.000.
Martel, Thomas J.; Bowen, Robert F.; and D'Ovidio, Thomas H., to Raytheon Company. Corn popping appliance. 255,534, 6-24-80, Cl. D7-85.000.
McAusland, Barrie H., to Invicta Plastics Limited. Board game unit. 255,588, 6-24-80, Cl. D21-20.000.
McKinsey, Kevin P.: *See—*
Aamoth, Gerald R.; and McKinsey, Kevin P., 255,565, Cl. D13-12.000.
Morioka, Minoru; and Ogishima, Tetuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 255,559, 6-24-80, Cl. D12-110.000.
Mournaud, Patrick: *See—*
Berce, Jacques; and Mournaud, Patrick, 255,604, Cl. D25-18.000.
Murray, Harold J.: *See—*
Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M., 255,563, Cl. D13-32.000.
Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M., 255,564, Cl. D13-32.000.
Murray Ohio Manufacturing Co., The: *See—*
Cox, William A.; Scott, Paul L.; and Cognata, Larry M., 255,573, Cl. D15-14.000.
Nathan, Michael; and Herman, Gary, to M. Nathan, Inc. Wrist purse. 255,509, 6-24-80, Cl. D3-59.000.
Nease, Allen D., Jr.: *See—*
Knoll, Frank S.; and Nease, Allen D., Jr., 255,579, Cl. D15-147.000.
Knoll, Frank S.; and Nease, Allen D., Jr., 255,580, Cl. D15-147.000.
Ogishima, Tetuo: *See—*
Morioka, Minoru; and Ogishima, Tetuo, 255,559, Cl. D12-110.000.
Olmstead, Charles H.: *See—*
Simone, James V.; and Olmstead, Charles H., 255,541, Cl. D8-387.000.
Olympus Optical Co., Ltd.: *See—*
Imada, Michio, 255,566, Cl. D14-5.000.
Owens, Harry. Film strip viewer. 255,581, 6-24-80, Cl. D16-17.000.
OY. Fiskars AB.: *See—*
Dahlqvist, Olof, 255,576, Cl. D15-138.000.
Dahlqvist, Olof, 255,577, Cl. D15-138.000.
Parr, Alice J.: *See—*
Berling, Janet S.; Parr, Alice J.; Berling, Everett; and Parr, Edward, 255,590, Cl. D21-145.000.
Parr, Edward: *See—*
Berling, Janet S.; Parr, Alice J.; Berling, Everett; and Parr, Edward, 255,590, Cl. D21-145.000.
Pearson, Eugene W.; and Short, Wilbur G., to Canron Corp. Open back stationary press. 255,575, 6-24-80, Cl. D15-123.000.
Peterkin, Stuart M.: *See—*
Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M., 255,563, Cl. D13-32.000.
Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M., 255,564, Cl. D13-32.000.
Pittman, Ernest A., to Chromcraft Corporation. Bar. 255,516, 6-24-80, Cl. D6-144.000.
Pold, Ilmar: *See—*
Pold, Juri; and Pold, Ilmar, 255,561, Cl. D12-158.000.
Pold, Juri; and Pold, Ilmar. Motor cycle parcel carrier. 255,561, 6-24-80, Cl. D12-158.000.
Procter & Gamble Company, The: *See—*
Appleman, Donald T.; and Campbell, Paul R., 255,614, Cl. D92-1.00C.
Appleman, Donald T.; and Campbell, Paul R., 255,615, Cl. D92-1.00C.
Pummer, Roland C., to Timex Corporation. Electro-optic digital display for a timepiece. 255,554, 6-24-80, Cl. D10-125.000.
Quenot, Michel, to Stanley-Mabo. Combined tape rule and key ring. 255,510, 6-24-80, Cl. D3-65.000.
Quigley, Penny P.: *See—*
Quigley, Richard I., Jr.; and Quigley, Penny P., 255,522, Cl. D6-198.000.
Quigley, Richard I., Jr.; and Quigley, Penny P. Combined bed headboard and plural mount picture frame. 255,522, 6-24-80, Cl. D6-198.000.
Rams, Dieter, to Braun Aktiengesellschaft. Combined phonograph and cassette player and recorder or the like. 255,568, 6-24-80, Cl. D14-20.000.
Rasocha, Stanley, to Dacor Corporation. Underwater breathing regulator. 255,609, 6-24-80, Cl. D29-6.000.
Raytheon Company: *See—*
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,536, Cl. D7-95.000.
Bowen, Robert F.; Lange, Alfred C.; and Herbst, Walter B., 255,537, Cl. D7-95.000.
Freedman, George; Teich, Wesley W.; and Bowen, Robert F., 255,535, Cl. D7-85.000.
Lange, Alfred C.; Teich, Wesley W.; and Bowen, Robert F., 255,533, Cl. D7-85.000.
Martel, Thomas J.; Bowen, Robert F.; and D'Ovidio, Thomas H., 255,534, Cl. D7-85.000.
Ricoh Company, Ltd.: *See—*
Goto, Tetuya, 255,583, Cl. D16-30.000.
Roberts, Margaret, to Marsupium, Inc. Sleeping bag. 255,525, 6-24-80, Cl. D6-268.000.
Rowe Furniture Corporation: *See—*
Friedman, Ira, 255,515, Cl. D6-63.000.
Friedman, Ira, 255,519, Cl. D6-175.000.
Rutter, Sheldon M., to Scott & Fetzer Company, Quikut Division, The. Flatware handle. 255,538, 6-24-80, Cl. D7-152.000.
S.A.Y. Industries, Inc.: *See—*
Humphries, Romilly H., 255,544, Cl. D9-159.000.
Saffell, Jon R., to Fostoria Glass Company. Condiment shaker. 255,532, 6-24-80, Cl. D7-54.000.
Salton, Inc.: *See—*
Dziekonski, Robert, 255,529, Cl. D7-41.000.
Sargent, Frank T.; and Antos, John M., to Thetford Corporation. Toilet. 255,597, 6-24-80, Cl. D23-48.000.
Sawafuji Denki Kabushiki Kaisha: *See—*
Izumi, Toshio, 255,553, Cl. D10-106.000.
Schick, George: *See—*
Lampe, Robert C.; and Schick, George, 255,595, Cl. D23-23.000.
Schonstedt, Erick O., to Schonstedt Instrument Company. Magnetic locator. 255,552, 6-24-80, Cl. D10-78.000.
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Schonstedt, Erick O., 255,552, Cl. D10-78.000.
Schweiger Industries, Inc.: *See—*
Williams, David P. G., 255,514, Cl. D6-62.000.
Scott & Fetzer Company, Quikut Division, The: *See—*
Rutter, Sheldon M., 255,538, Cl. D7-152.000.
Scott, Paul L.: *See—*
Cox, William A.; Scott, Paul L.; and Cognata, Larry M., 255,573, Cl. D15-14.000.
Seager, Richard H., to King-Seeley Thermos Co. Tray. 255,527, 6-24-80, Cl. D7-21.000.
Seager, Richard H., to King-Seeley Thermos Co. Cover for a plate or the like. 255,528, 6-24-80, Cl. D7-40.000.
Shaftner, Robert F.: *See—*
Briggs, Eugene C.; Shaftner, Robert F.; and Giambrone, Harry J., 255,599, Cl. D23-93.000.
Short, Wilbur G.: *See—*
Pearson, Eugene W.; and Short, Wilbur G., 255,575, Cl. D15-123.000.
Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 255,542, 6-24-80, Cl. D9-143.000.
Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 255,543, 6-24-80, Cl. D9-143.000.
Simone, James V.; and Olmstead, Charles H., to Wright Line Inc. Security screw. 255,541, 6-24-80, Cl. D8-387.000.
Simpson, Anthony: *See—*
Brooksby, Brian T.; Murray, Harold J.; Simpson, Anthony; and Peterkin, Stuart M., 255,563, Cl. D13-32.000.
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Wong, Chung-Chee; and Dalton, David R., 255,612, Cl. D26-48.000.
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Lung, Gilbert K., 255,569, Cl. D14-36.000.
Stanley-Mabo: *See—*
Quenot, Michel, 255,510, Cl. D3-65.000.
Steinkraus, Celeste M.: *See—*
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Tate, Charles G., Jr. Nail file. 255,607, 6-24-80, Cl. D28-59.000.
Teich, Wesley W.: *See—*
Freedman, George; Teich, Wesley W.; and Bowen, Robert F., 255,535, Cl. D7-85.000.
Lange, Alfred C.; Teich, Wesley W.; and Bowen, Robert F., 255,533, Cl. D7-85.000.
Thetford Corporation: *See—*
Sargent, Frank T.; and Antos, John M., 255,597, Cl. D23-48.000.
Timex Corporation: *See—*
Pummer, Roland C., 255,554, Cl. D10-125.000.
Trend Line Furniture Corporation: *See—*
Collins, Samuel T., 255,513, Cl. D6-61.000.

Union Carbide Australia Limited: *See*—
Wong, Chung-Chee; and Dalton, David R., 255,612, Cl. D26-48.000.

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Llanos, Leon A., 255,585, Cl. D19-76.000.

Vanderwerf, Robert H., to Vy-Dawn, Incorporated. Spirit level vial container. 255,504, 6-24-80, Cl. D10-74.000.

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Vanderwerf, Robert H., 255,504, Cl. D10-74.000.

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Marchant, Nicholas G., 255,600, Cl. D23-97.000.

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Wong, Chung-Chee; and Dalton, David R., to Sonca Industries Limited; and Union Carbide Australia Limited. Lantern. 255,612, 6-24-80, Cl. D26-48.000.

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Simone, James V.; and Olmstead, Charles H., 255,541, Cl. D8-387.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ekuan, Kenji, 255,558, Cl. D12-16.000.

Yarabinec, George. Mat. 255,523, 6-24-80, Cl. D6-201.000.

Yarabinec, George. Mat. 255,524, 6-24-80, Cl. D6-201.000.

Zaidman, Jacques: *See*—
Zaidmann, George; Zaidman, Jacques; and Zaidman, Joseph, 255,546, Cl. D9-193.000.

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Zaidmann, George; Zaidman, Jacques; and Zaidman, Joseph, 255,546, Cl. D9-193.000.

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CLASSIFICATION OF PATENTS

ISSUED JUNE 24, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

93 4,208,742
104 4,208,743
163 4,208,744

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CLASS 4

228 4,208,747
448 4,208,746

CLASS 5

451 4,208,748

CLASS 7

106 4,208,749

CLASS 8

467 4,209,297
582 4,209,298

CLASS 11

1 A 4,208,750

CLASS 12

10 4,208,751

CLASS 15

1.7 4,208,752
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160 4,208,755
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250.23 4,208,759
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CLASS 17

45 4,208,764
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CLASS 19

64.5 4,208,766
97 4,208,767
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CLASS 23

230 B 4,209,300
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CLASS 24

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230 AL 4,208,771

CLASS 29

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156.4 R 4,208,774
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577 C 4,208,781
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593 4,208,783
596 4,208,784
611 4,208,785
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798 4,208,790
862 4,208,788

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CLASS 33

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180 AT 4,208,798
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CLASS 35

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CLASS 37

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141 R 4,208,815
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CLASS 40

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CLASS 42

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CLASS 43

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57.5 R 4,208,825
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CLASS 44

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CLASS 46

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CLASS 47

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CLASS 48

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213 4,209,305

CLASS 49

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CLASS 51

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268 4,208,844
290 4,208,845

CLASS 52

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118 4,208,847
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CLASS 53

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328 R 4,208,860
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547 R 4,208,879
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CLASS 63

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CLASS 64

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CLASS 65

19 4,209,313
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CLASS 68

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CLASS 70

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CLASS 71

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CLASS 72

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344 4,208,899
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391 4,208,901

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136 A 4,208,904
141 A 4,208,905
155 4,208,906
190 R 4,208,907
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304 C 4,208,909
336 4,208,910
362 CP 4,208,911
421.5 R 4,208,912
425.4 R 4,208,913
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620 4,208,915
626 4,208,916
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761 4,208,919
828 4,208,920

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731 4,208,929
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10 R 4,209,321
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CLASS 82

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CLASS 86

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CLASS 89

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CLASS 93

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CLASS 99

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CLASS 101

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426 4,208,965

CLASS 102

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CLASS 108

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CLASS 111

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CLASS 112

86 4,208,975

CLASS 113

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CLASS 114

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CLASS 116

28.1 4,208,981
34 R 4,208,982
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CLASS 118

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CLASS 119

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CLASS 122

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122 E 4,208,996
136 4,208,997
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140 R 4,208,999
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CLASS 125

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CLASS 126

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CLASS 127

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CLASS 132

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CLASS 134

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56 R 4,209,028
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CLASS 136

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CLASS 137

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236 R 4,209,034
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CLASS 149

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354 R 4,209,050
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CLASS 164

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CLASS 165

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95 4,209,063
130 4,209,064

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CLASS 172

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CLASS 173

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65 R 4,209,661

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100.41 D 4,209,670
100.41 M 4,209,669
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65 R 4,209,073
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CLASS 184

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CLASS 187

29 R 4,209,082

CLASS 188

75.6 4,209,083
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CLASS 190

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CLASS 192

53 F 4,209,086

CLASS 198

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345 4,209,088
847 4,209,089

CLASS 200

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7 4,209,109
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75 4,209,111
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2 :	4,208,827	4,209,017		4,208,825	13 : 4,208,870	4,209,671	4,208,882
4 :	4,208,933	4,209,029		4,208,921	4,209,103	4,209,730	4,208,889
	4,209,099	4,209,035		4,209,033	4,209,707	4,209,826	4,208,905
6 :	4,208,742	4,209,041		4,209,068	16 : 4,208,757	4,209,840	4,209,046
	4,208,790	4,209,061		4,209,108	4,209,109	18 : Re.30,314	4,209,049
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	4,209,355	4,209,215		4,208,867	4,208,926	4,209,427	4,209,371
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	4,209,717	4,209,240		4,208,916	4,208,958	4,209,732	4,209,560
	4,209,745	4,209,250		4,208,947	4,208,970	4,209,736	4,209,582
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8 :	4,208,814	4,209,295		4,209,239	4,209,010	4,208,954	4,209,711
9 :	4,208,803	4,209,299		4,209,255	4,209,013	4,209,071	4,209,750
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01 :	4,208,948	4,209,552		4,209,747	4,209,217	4,209,166	4,208,805
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